SHARP SERVICE MANUAL

No. 00ZUX178DESME

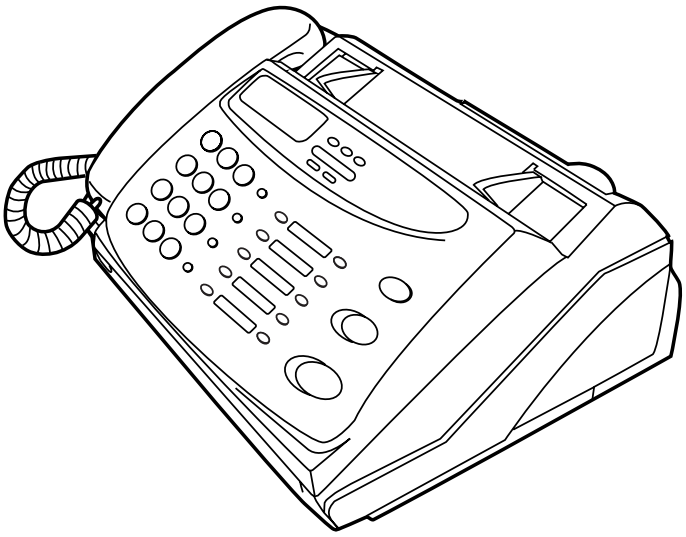

Illustration: UX-178

FACSIMILE

UX-178
FO-175
NX-76
MODEL NX-72

Non Cutter model	Cutter model
FO-175/NX-72	UX-178/NX-76

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Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

CAUTION FOR BATTERY REPLACEMENT

(Danish) ADVARSEL !
Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.

(English) Caution !
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's
instructions.

(Finnish) VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

(French) ATTENTION
Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type recommandé par le constructeur.
Mettre au rébut les batteries usagées conformément aux
instructions du fabricant.

(Swedish) VARNING
Explosionsfare vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.

(German) Achtung
Explosionsgefahr bei Verwendung inkorrekter Batterien.
Als Ersatzbatterien dürfen nur Batterien vom gleichen Typ oder
vom Hersteller empfohlene Batterien verwendet werden.
Entsorgung der gebrauchten Batterien nur nach den vom
Hersteller angegebenen Anweisungen.

CHAPTER 1. GENERAL DESCRIPTION

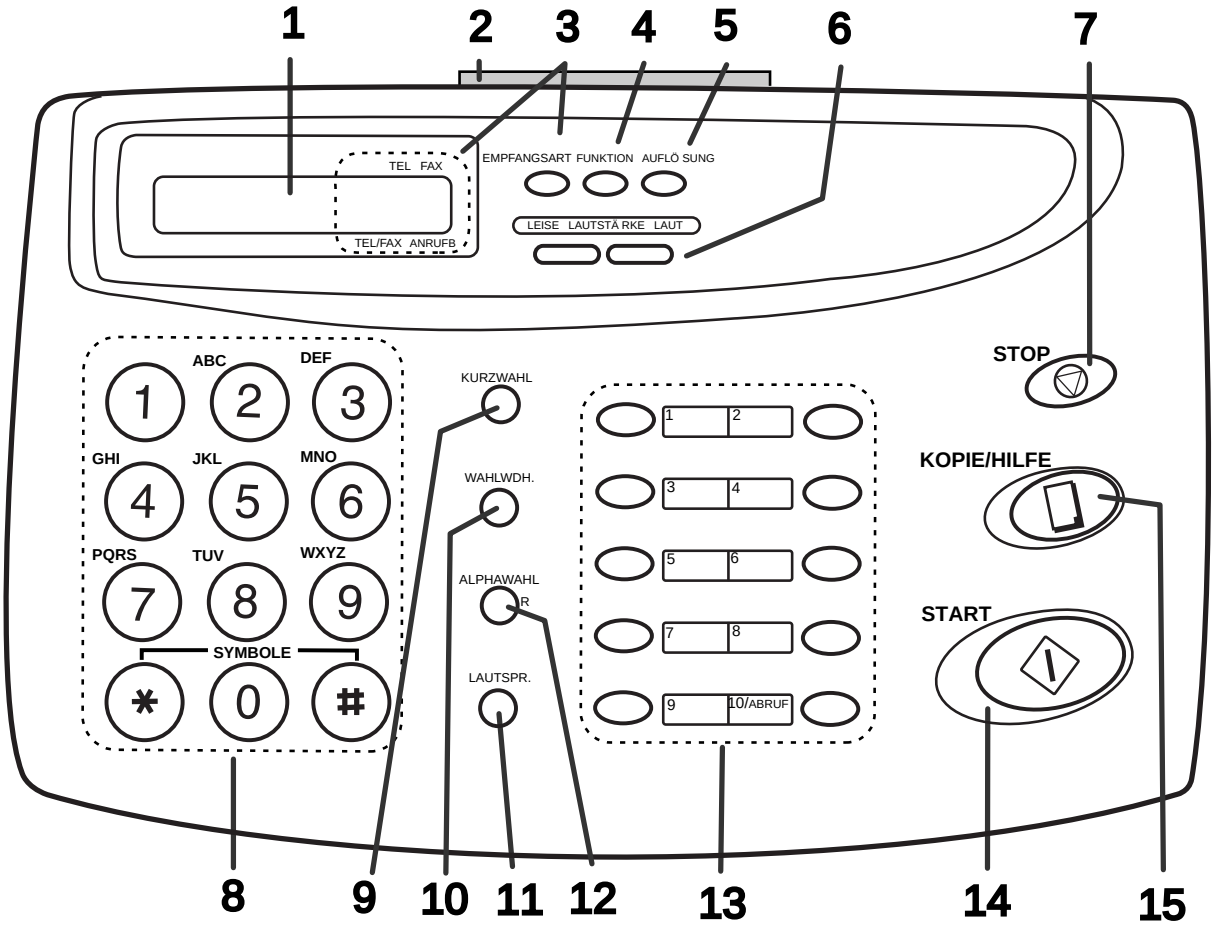
[1] Specifications

Recording system:	Thermal recording
Automatic dialing:	Rapid Key Dialing: 10 numbers Speed Dialing: 20 numbers
Fax paper:	Initial starter roll (included with fax machine): 10 m roll Recommended replacement roll: FO-40PR (50 m Rolle)
Automatic document feeder:	10 sheets max.
Paper cutting method:	**FO-175/NX-72**: Tear off by hand **UX-178/NX-76**: Automatic cutter
Modem speed:	9600 bps with automatic fallback to 7200, 4800, or 2400 bps
Transmission time* :	Approx. 15 seconds
Display:	7 x 5 dots, 1 line by 16-digit display
Reception modes:	FAX, TEL, TEL/FAX, ANS.
Resolution:	Horizontal: 8 dots/mm Vertical: Standard: 3.85 lines/mm Fine/Halftone: 7.7 lines/mm Super fine: 15.4 lines/mm
Halftone (grayscale):	**FO-175/NX-72**: 16 levels **UX-178/NX-76**: 16/64 levels
Applicable telephone line:	Public switched telephone network/PBX
Compatibility:	ITU-T (CCITT) G3 mode
Configuration:	Half-duplex, desktop transceiver
Compression scheme:	Modified Huffman and Sharp special mode
Scanning method:	Sheet-feeder CIS (Contact Image Sensor)
Effective recording width:	210 mm max.
Input document size:	Automatic feeding: Width — 148 to 216 mm Length — 140 to 297 mm Manual feeding: Width — 148 to 216 mm Length — 140 to 600 mm
Effective scanning width:	210 mm max.
Contrast control:	Automatic/Dark selectable
Copy function:	Standard
Telephone function:	Standard (cannot be used for incoming/outgoing if power fails)
Power requirements:	220 - 230 V AC, 50 Hz
Operating environment:	5 to 35°C
Humidity:	Maximum: 85 %
Power consumption:	Stand-by: 5.1 W Maximum: 120 W
Dimensions:	Width: 308 mm Depth: 256 mm Height: 138 mm
Weight:	**FO-175/NX-72**: Approx. 2.5 kg **UX-178/NX-76**: Approx. 2.6 kg

* Based on ITU-T (CCITT) Test Chart #1 at standard resolution in Sharp special mode, excluding time for protocol signals (i.e., ITU-T phase C time only).

As a part of our policy of continuous improvement, SHARP reserves the right to make design and specification changes for procduct improvement without prior notice. The performance specifications figures indicated are nominal values of production units. There may be some deviation from these values in individual units.

[2] Operation panel



1. LCD-Anzeige(Display)
This displays messages and prompts during operation and programming.

2. PANEL RELEASE(PANEL RELEASE)
Pull this release toward you to open the operation panel.

3. EMPFANGSART(RECEPTION MODE key)
Press this key to select the reception mode. An arrow in the display will point to the currently selected reception mode.

4. FUNKTION(FUNCTION key)
Press this key to select various special function.

5. AUFLÖSUNG(RESOLUTION key)
Press this key to adjust the resolution and contrast before sending or copying a document.

6. LEISE/LAUT(VOLUME keys)
Press these keys to adjust the volume of the speaker when the **SPEAKER** key has been pressed, or the volume of the ringer at all other times.

7. STOP(STOP key)
Press this key to stop operations before they are completed.

8. Zifferntasten(Number keys)
Use these keys to dial numbers, and enter number and letters during number/name storing procedures.

9. KURZWAHL(SPEED DIAL key)
Press this key to dial a 2-digit Speed Dial number.

10. WAHLWDH.(REDIAL key)
Press this key to automatically redial the last number dialed.

11. LAUTSPR.(SPEAKER key)
Press this key to hear the line and fax tones through the speaker when sending a document.
Note: **This is not a speakerphone.** You must pick up the handset to talk with the other party.

12. ALPHAWAHL/R(SEARCH/R) key
Press this key to search for an automatic dialing number, or, if you are on a P.B.X. extension, press this key to transfer or put the other party on hold.

13. Zeilwahltasten(Rapid Dial keys)
Press one of these keys to dial a fax or voice number automatically. (Note that you must attach the Rapid Key labels.)

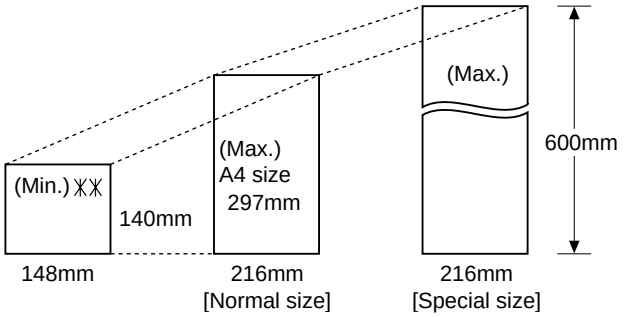
14. START(START key)
Press this key to send or receive a document.

15. KOPIE/HILFE(COPY/HELP key)
When a document is in the feeder, press this key to make a copy. At any other time, press this key to print out the Help List, a quick refernce guide to the opeation of your fax.

[3] Transmittable documents

1. Document Sizes

Normal size	width	148 – 216 mm
	length	140 – 297 mm



※※ Use document carrier sheet for smaller documents.

* With special sizes, only one sheet can be fed into the machine at a time. Insert next page into feeder as current page is being scanned.

2. Paper Thickness & Weight

Normal size	ADF 10 sheets	Thickness	0.06–0.12 mm
		Weight	52–104g/m^2 14–28lbs
Special size		Thickness	0.12–0.20 mm
		Weight	52–157 g/m^2

3. Document Types

- Normal paper

  Documents handwritten in pencil (No. 2 lead or softer), fountain pen, ball-point pen, or felt-tipped pen can be transmitted.

  Documents of normal contrast duplicated by a copying machine can also be transmitted.
- Diazo copy (blue print)

  Diazo copy documents of a normal contrast may be transmitted.
- Carbon copy

  A carbon copy may be transmitted if its contrast is normal.

4. Cautions on Transmitting Documents

- Documents written in yellow, greenish yellow, or light blue ink cannot be transmitted.
- Ink, glue, and correcting fluid on documents must be dry before the documents can be transmitted.
- All clips, staples and pins must be removed from documents be-fore transmission.
- Patched (taped) documents should be copied first on a copier and then the copies used for transmission.
- All documents should be fanned before insertion into the feeder to prevent possible double feeds.

5. Automatic Document Feeder Capacity

Number of pages that can be placed into the feeder at anytime is as follows:

Normal size: max. ADF 10 sheets

Special size: single sheet only (manual feed)

NOTES:
- When you need to send or copy more pages than the feeder limit, place additional pages in feeder when last page in feeder is being scanned.
- Place additional pages carefully and gently in feeder. If force is used, double-feeding or a document jam may result.

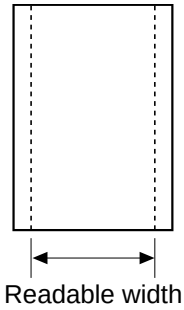
6. Readable Width & Length

The readable width and length of a document are slightly smaller than the actual document size.

Note that characters or graphics outside the effective document scanning range will not be read.

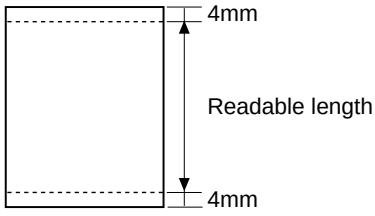
- **Readable width**

210 mm, max.



- **Readable length**

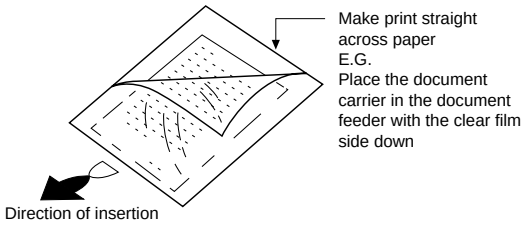
This is the length of the document sent minus 4 mm from the top and bottom edges.



7. Use of Document Carrier Sheet

A document carrier sheet must be used for the following documents.

- Those with tears.
- Those smaller than size 148 mm (W) x 140 mm (L).
- Carbon-backed documents


Make print straight across paper
E.G.
Place the document carrier in the document feeder with the clear film side down
Direction of insertion

NOTE: To transmit a carbon-backed document, insert a white sheet of paper between the carbon back of the document and the document carrier.

- Those containing an easily separable writing substance (e.g., tracing paper written on with a soft, heavy lead pencil).

NOTES:
- When using the document carrier, carefully read the instructions written on the back.
- If the document carrier is dirty, clean it with a soft, moist cloth, and then dry it before using for transmission.
- Do not place more than one document in the carrier at a time.

[4] Installation

1. Site selection

Take the following points into consideration when selecting a site for this model.

ENVIRONMENT

- The machine must be installed on a level surface.
- Keep the machine away from air conditioners, heaters, direct sunlight, and dust.
- Provide easy access to the front, back, and sides of the machine. In particular, keep the area in front of the machine clear, or the original document may jam as it comes out after scanning.
- The temperature should be between 5° and 35°C.
- The humidity should be between 30% and 85% (without condensation).

ELECTRICITY

220 - 230V, 50Hz, earthed (2-prong) AC outlet is required.

Caution!

- Connection to a power source other than that specified will cause damage to the equipment and is not covered under the warranty.
- If your area experiences a high incidence of lightning or power surges, we recommend that you install a surge protector for the power and telephone lines. Surge protectors can be purchased at most telephone specialty stores.

If the machine is moved from a cold to a warm place...

If the machine is moved from a cold to a warm place, it is possible that the reading glass may fog up, preventing proper scanning of documents for transmission. To remove the fog, turn on the power and wait approximately 2 hours before using the machine.

TELEPHONE JACK

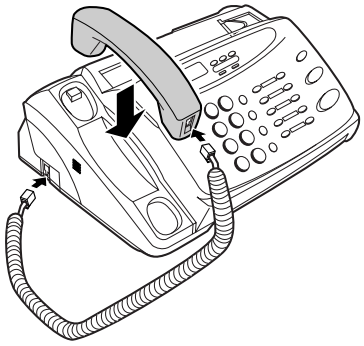
A standard telephone jack must be located near the machine.
This is the telephone jack commonly used in most homes and offices.

- Plugging the fax machine into a jack which is not an jack may result in damage to the machine or your telephone system. If you do not know what kind of jack you have, or needed to have one installed, contact the telephone company.

2. Connections

① Connect the handset as shown and place it on the handset rest.

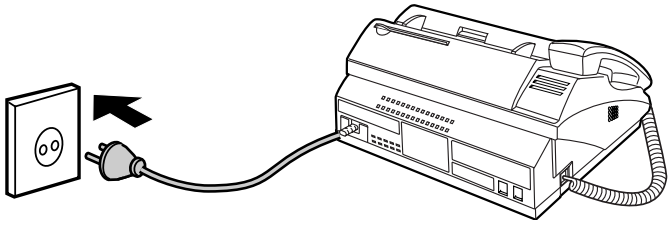
- Make sure the handset cord goes into the unmarked jack on the side of the machine!
- Use the handset to make ordinary phone calls, or to transmit and receive documents manually.
- The ends of the handset lead are identical, so they will go into either socket.



② Plug the power lead into a 220 - 230 V, 50 Hz, earthed (2-prong) AC outlet.

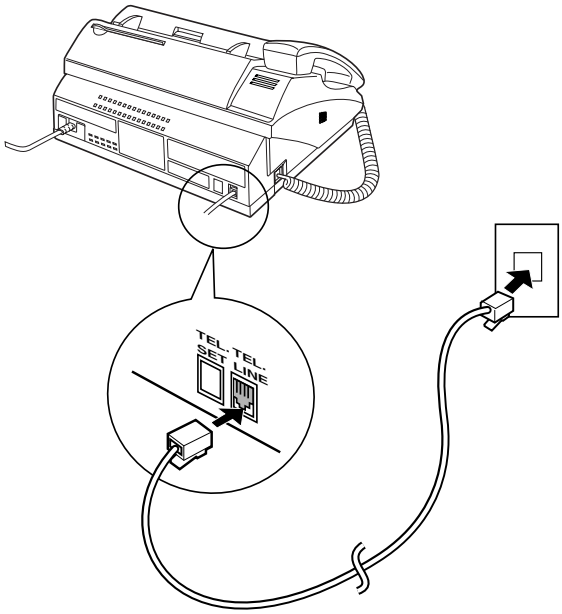
- **Caution:** The mains outlet (socket outlet) should be installed near the equipment and be easily accessable.
- The fax does not have a power on/off switch, so the power is turned on and off by simply plugging or unplugging the power lead.

Note: If your area experiences a high incidence of lightning or power surges, we recommend that you install surge protectors for the power and telephone lines. Surge protectors can be purchased from your dealer or at most telephone specialty stores.



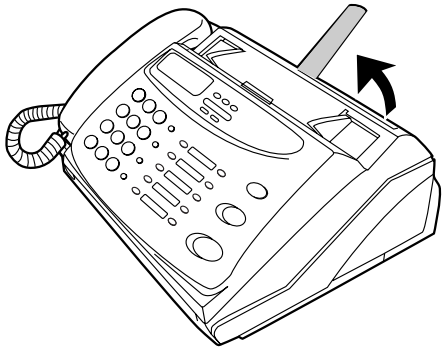
③ Insert one end of the telephone line cord into the "**TEL. LINE**" socket. Insert the other end into a standard single-line telephone wall socket.

- Be sure to insert the telephone line cord into the "**TEL. LINE**" socket. **Do not** insert into the "**TEL. SET**" socket.



3. Original document support

① Rotate the original document support so that it points straight out.

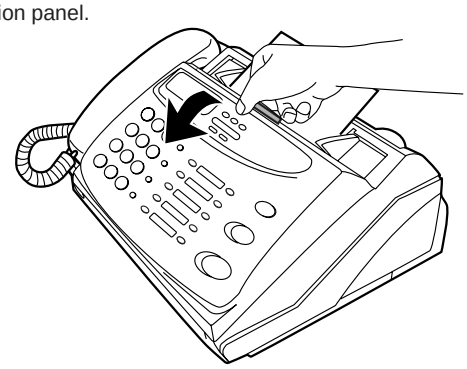


4. Loading the fax paper

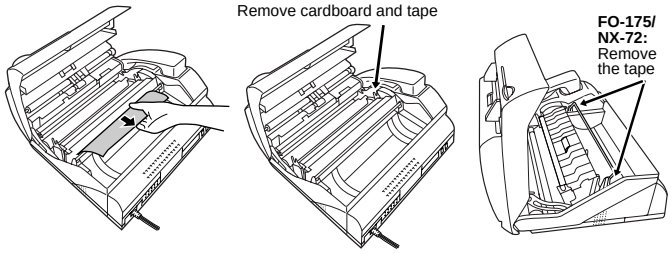
- Your fax machine prints incoming faxes on a special kind of paper called thermal paper.
- The fax's print head creates text and images by applying heat to the thermal paper.

Note: The power must be on (plug in the power cord) when loading fax paper in the fax machine.

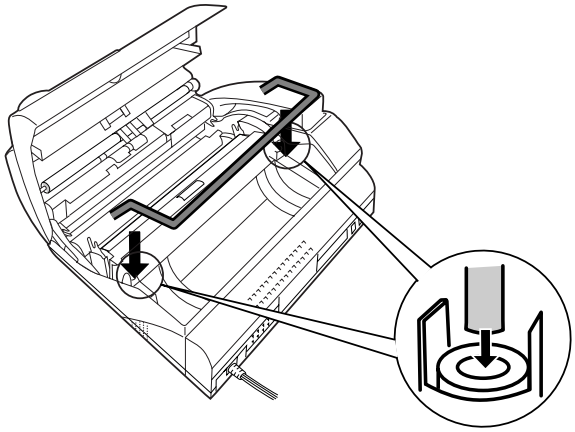
① Pull the release marked **PANEL RELEASE** toward you and open the operation panel.



② Remove the packing paper from the paper compartment.

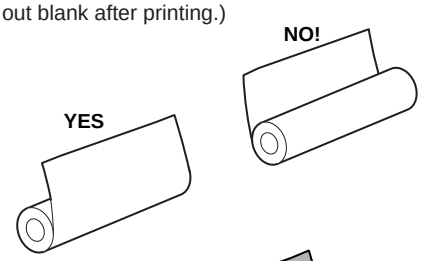


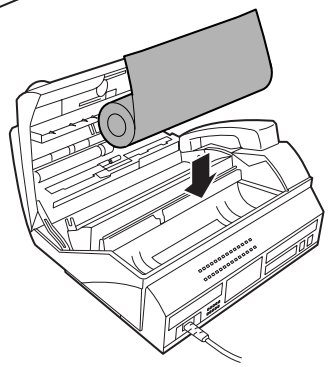
③ **FO-175/NX-72:** Make sure the ends of the guide wire are inserted in the holes. (If the guide wire is not inseted correctly, out-of-paper detection will not be possible.)



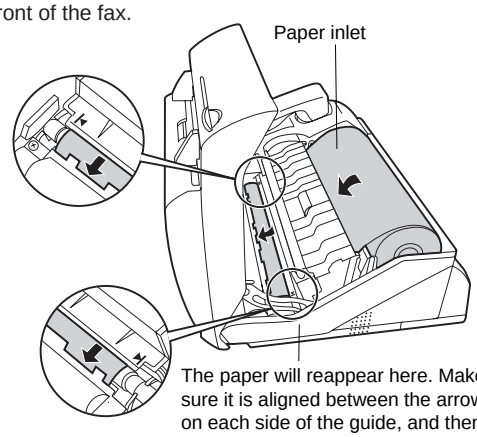
④ Unwrap the roll of fax paper and place it in the compartment.

- **Important:** The roll must be placed so that the leading edge of the paper unrolls as shown. (The paper is only coated on one side for printing. If the roll is placed backwards, the paper will come out blank after printing.)

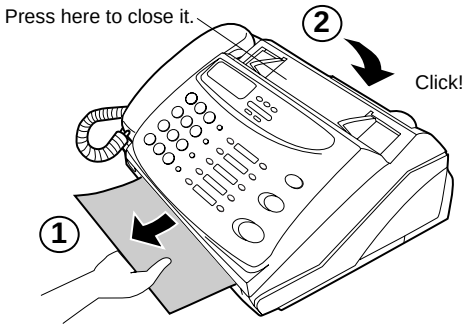




⑤ Insert the leading edge of the paper into the paper inlet. Continue to push the paper through the inlet until it comes out of the opening in the front of the fax.


Paper inlet
The paper will reappear here. Make sure it is aligned between the arrows on each side of the guide, and then passes under the plate and out the front of the fax.

⑥ Close the operation panel by pressing the "**PANEL RELEASE**" mark. Make sure it clicks into place.



⑦ **FO-175/NX-72:** A short length of the fax paper will feed out. Grasp the paper by the edge and pull upward to tear it off.

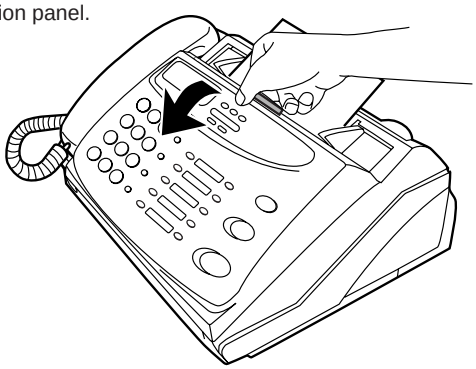
UX-178/NX-76: A short length of the fax paper will feed out and be cut off. (If this doesn't happen, repeat the loading procedure.)

Note: The UX-178/NX-76 has a built-in anti-curl mechanism that will help to reduce paper curling problems. The anticurl mechanism is more effective at the beginning of the paper roll and less effective towards the end.

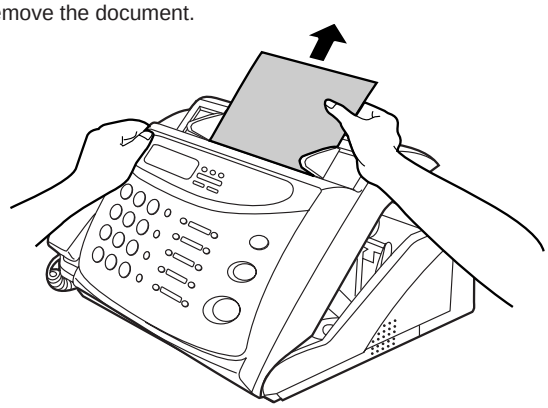
4. Clearing a jammed document

If the original document doesn't feed properly during transmission or copying, or DOCUMENT JAMMED appears in the display, first try pressing the **START** key. If it doesn't feed out, remove it as follows:
Important: Do not try to remove a document without opening the operation panel. This may damage the feeder mechanism.

① Pull the release marked **PANEL RELEASE** toward you and open the operation panel.

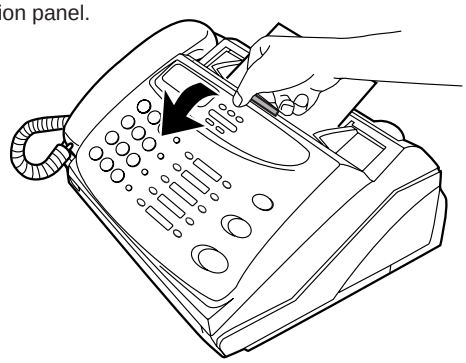


② Remove the document.



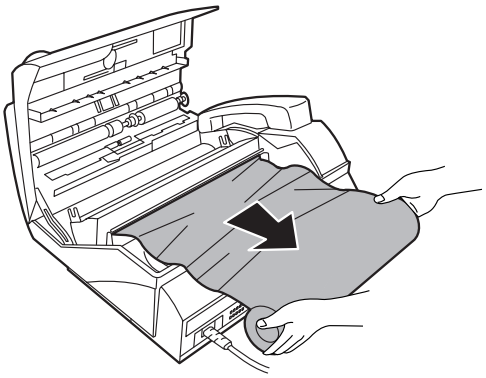
5. Clearing jammed fax paper

① Pull the release marked **PANEL RELEASE** toward you and open the operation panel.

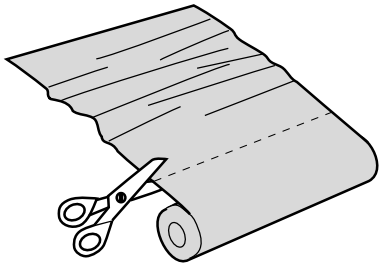


② Remove the paper roll.

- **UX-178/NX-76:** If any pieces of paper are stuck in the cutter, remove them with caution.
- **UX-178/NX-76:** Press the **START** key to reset the cutter.

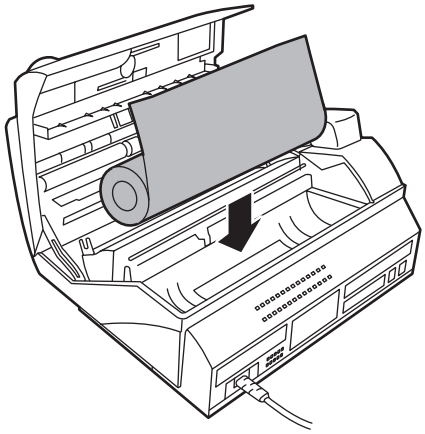


③ Cut off the wrinkled part of the paper.



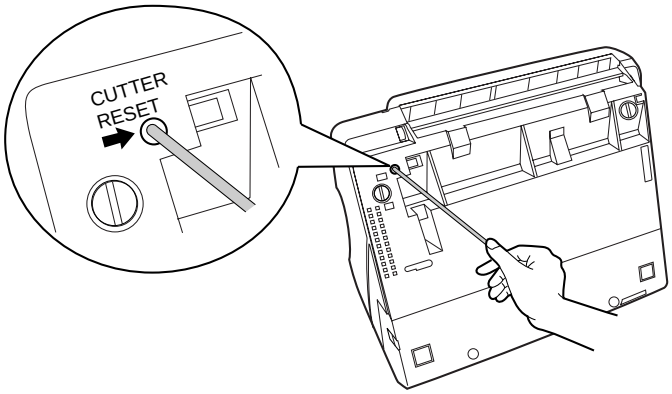
④ Reload the paper.

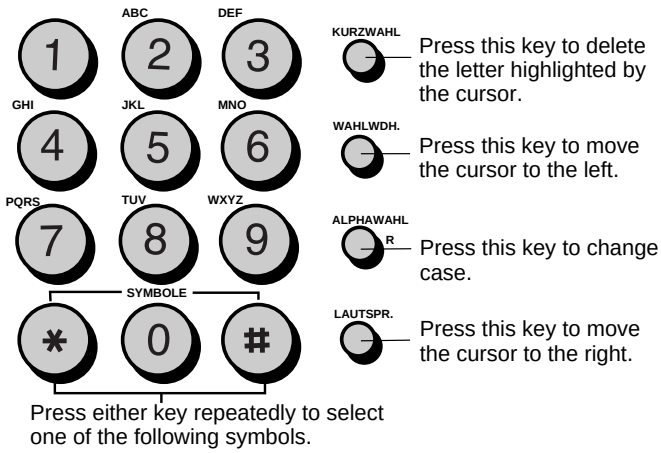
- Jammed fax paper is often caused by improper loading. Be sure to carefully follow the instructions for paper loading given in "Loading the Fax Paper" in page 1-5.



⑤ If the display still shows PAPER JAMMED (**UX-178/NX-76 only**)

If the display still shows PAPER JAMMED after you press the **START** key in Step 2 above, the cutter is still engaged in the cutting position. To open the cutter, turn the fax up on its rear end and insert any long, rod-like object with a flat or blunt end into the hole marked **CUTTER RESET**. Continue to push the rod in until you feel it move a lever inside the machine.

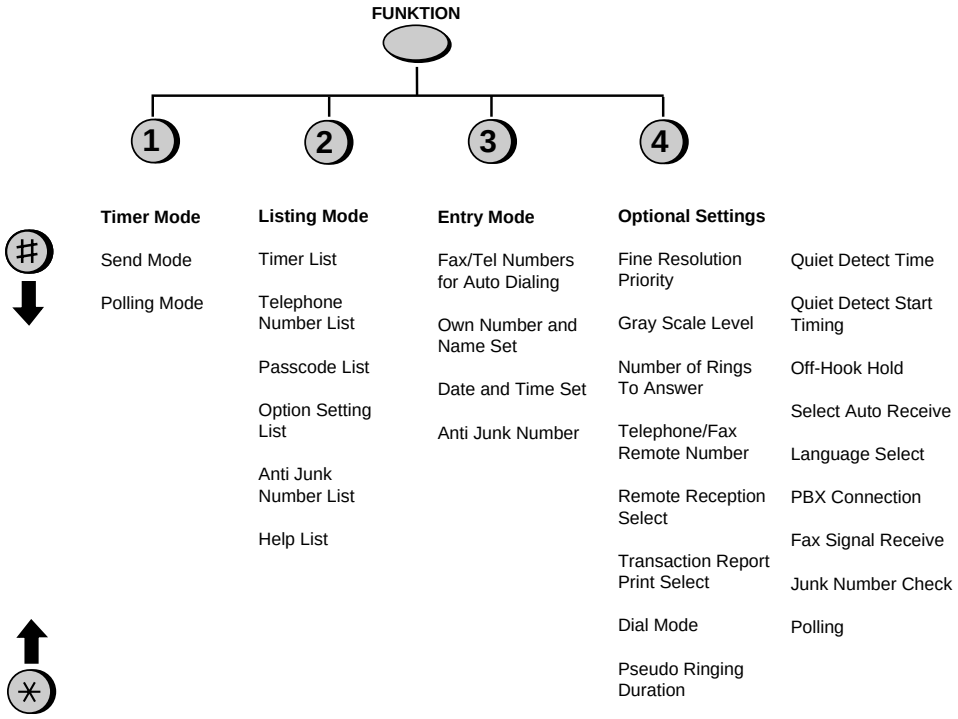




[5] Quick reference guide

FUNCTION key menu

The following chart shows the layout of the functions and settings accessed by pressing the **FUNCTION** key. First press the **FUNCTION** key, the appropriate numeric key as shown, and then "#" or " ⋇ " until the desired item appears.
Instructions for making each setting appear in the display. If you have any difficulty, refer to the detailed instructions on the page shown below the setting.



Note: Steps which are optional are enclosed in a dotted frame:

Transmitting documents

Normal Dialing	Load document → AUFLÖSUNG → Lift handset or press **SPEAKER** → Dial (press numeric keys) → Wait for reception tone → START → Hang up
Direct Keypad Dialing	Load document → AUFLÖSUNG → Dial (press numeric keys) → START
Rapid Key Dialing	Load document → AUFLÖSUNG → Press Rapid key
Speed Dialing	Load document → AUFLÖSUNG → KURZWAHL → Enter Speed Dial number (press 2 numeric keys) → START
Redialing	Load document → AUFLÖSUNG → WAHLWDH. → Wait for reception tone → START

Making voice calls

Normal Dialing	Lift handset or press **SPEAKER** → Dial (press numeric keys) → Lift handset if you pressed **SPEAKER**
Rapid Key Dialing	Lift handset or press **SPEAKER** → Press Rapid key → Lift handset if you pressed **SPEAKER**
Speed Dialing	Lift handset or press **SPEAKER** → KURZWAHL → Enter Speed Dial number (press 2 numeric keys) → Lift handset if you press **SPEAKER**
Redialing	WAHLWDH. → Lift handset

CHAPTER 2. ADJUSTMENTS

[1] Adjustments

General

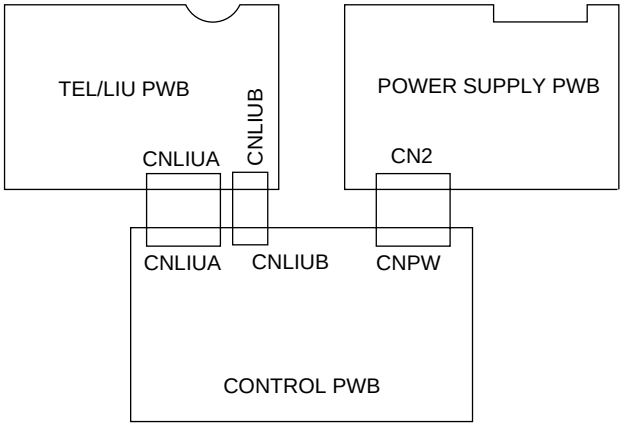
Since the following adjustments and settings are provided for this model, make adjustments and/or setup as necessary.

1. Adjustments

Adjustments of output voltage (FACTORY ONLY)

1. Install the power supply unit in the machine.
2. Set the recording paper and document.
3. When the document is loaded, power is supplied to the output lines. Confirm that outputs are within the limits below.

Output voltage settings



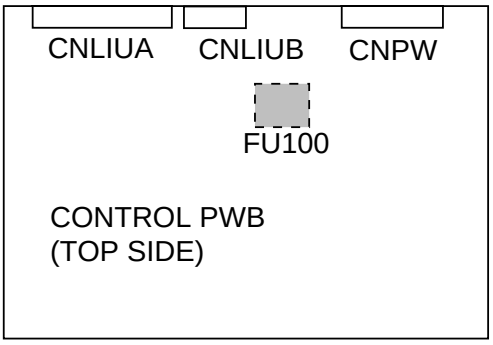
Output	Voltage limits
+5V	4.75V ~ 5.25V
+24V	23.3V ~ 24.7V

Connector No. / Pin No.	CNPW
1	DG
2	+5V
3	VTH-ON
4	MG
5	MG
6	MG
7	+24V
8	VTH
9	VTH
10	VTH

2. IC protectors replacement

ICPs (IC Protectors) are installed to protect the motor driver circuit. ICPs protect various ICs and electronic circuits from an overcurrent condition.

The location of ICPs are shown below:



(1) FU100 (ICP-S07) is installed in order to protect IC's from an overcurrent generated in the motor drive circuit. If FU100 is open, replace it with a new one.

3. Settings

(1) Dial mode selector

DIAL mode (Soft Switch No. SWB4 DATA No. 3)

(step 1) Select "OPTION SETTING".

KEY : [FUNCTION] (4)

DISPLAY: [OPTION SETTING] ⇔ [PRESS＊ OR #]

(step 2) Select "DIAL MODE".

KEY: (#)(#)(#)(#)(#)(#)(#)

Cursor
When initially registering, the mode shows 1=TONE.
When registering again, the mode which was registered formerly is shown.

DISPLAY: [DIAL MODE] ⇔ [1=TONE, 2=PULSE]

(step 3) Select, using "1" or "2".

KEY: (1)

DISPLAY: [TONE SELECTED]

KEY: (2)

DISPLAY: [PULSE SELECTED]

(step 4) End, using the "STOP" key.

KEY: STOP

4. Method of release of starting lock up by Battery Reset

(1) Summary

There is a possibility of release of the lock up by reset the signal BATRST of CPU (XFC3, XFC5), if it lock up when you turn on the power of the set in UX-178/NX-72 series. We inform you of the method of release.

(2) Contents

When you turn on the power of the set without EPROM by your mistake, if you turn off the power after, turn on the power with EPROM again, the set don't start.

In this case, before you judge the CPU (XFC3, XFC5) is wrong, you need to confirm the release of the lock up by reset the signal BATRST. and unknown origin in the same way.

Method of the reset of signal BATRST
Short the between leads of the capacitor C5 on the control PWB, X2945FF-7Y in the state of POWER OFF.

[2] Diagnostics and service soft switch

1. Operating procedure

(1) Entering the diagnostic mode

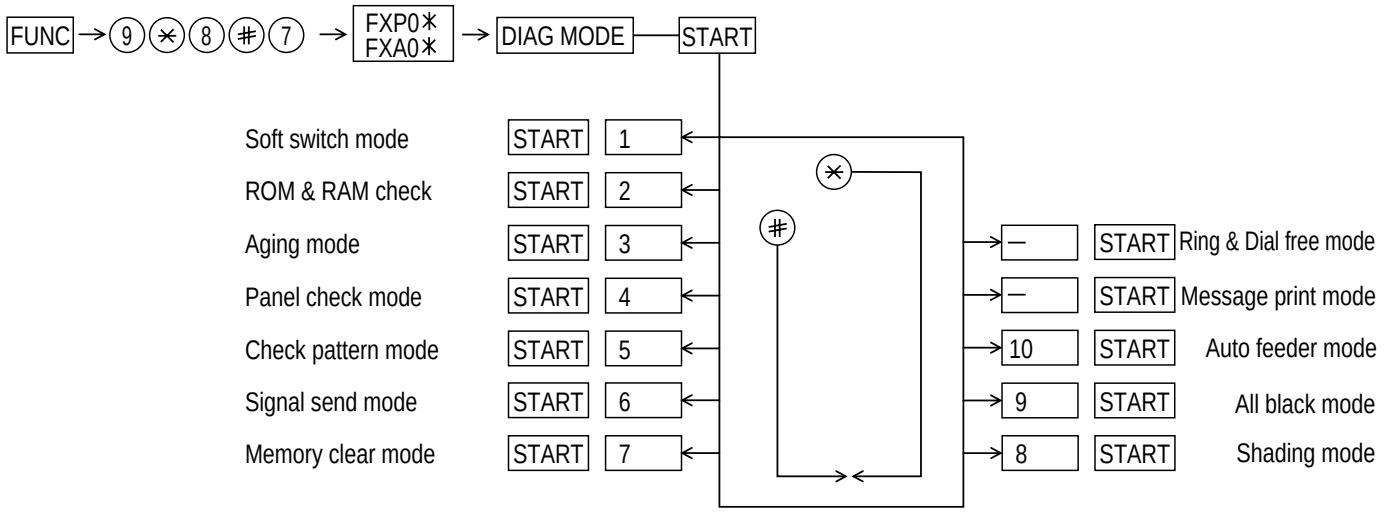
Press FUNC → 9 → ✳ → 8 → # → 7 , and the following display will appear.

ROM Ver. FXP0✳ (FXA0✳) After 2 sec: DIAG MODE

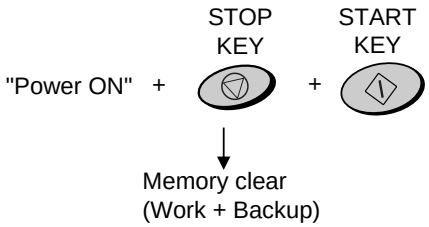
FXP0✳ (UX-178DE/NX-76DE)
FXA0✳ (FO-175DE/NX-72DE)

Then press the START key. Select the desired item with the ✳ key or the # key or select with the rapid key. Enter the mode with the START key.

(Diag•specifications)


FUNC → 9 ✳ 8 # 7 → FXP0✳ FXA0✳ → DIAG MODE → START
Soft switch mode START 1
ROM & RAM check START 2
Aging mode START 3
Panel check mode START 4
Check pattern mode START 5
Signal send mode START 6
Memory clear mode START 7
– START Ring & Dial free mode
– START Message print mode
10 START Auto feeder mode
9 START All black mode
8 START Shading mode

If the diag mode cannot be set, repeat the diag mode operation, performing the following operation.
After the power is turned on and "WAIT A MOMENT" is indicated, press the STOP key.



In relation with the process response (request from Production Engineering) "WAIT A MOMENT" clock indication may appear depending on STOP key timing. If the STOP key is held down, "MEMORY CLEAR?" appears.

2. Diagnostic items

ITEM No.	DIRECT key	Contents	Function
1	1	SOFT SWITCH MODE	Soft switches are displayed and changed. List can be output.
2	2	ROM & RAM CHECK	ROM is sum-checked, and RAM is matched. Result list is output.
3	3	AGING MODE	10 sheets of check patterns are output every 5 minutes per sheet.
4	4	PANEL CHECK MODE	Panel keys are tested. Result list is output.
5	5	CHECK PATTERN MODE	Check pattern is output.
6	6	SIGNAL SEND MODE	Various signals of FAX communication are output.
7	7	MEMORY CLEAR MODE	Back-up memory is cleared, and is set at delivery.
8	8	SHADING MODE	Shading compensation is performed in this mode.
9	9	ALL BLACK MODE	To check the print head, whole dots are printed over the interval of 2 m.
10	10	AUTO FEEDER MODE	Insertion and discharge of document are tested.
11	–	MESSAGE PRINT MODE	The display message of each language is printed out together with the English equivalent.
12	–	RING & DIAL FREE MODE	Allows CI detection of 13Hz or more. Eliminates dial tone detection in auto dial.

3. Diagnostic items description

3. 1. Soft switch mode

Used to change the soft switch settings.

The soft switch which is stored internally is set by using the keys.

The available soft switches are SW-A1 to SW-L2.

The content of soft switches is shown in page 2-5 to 2-15.

The contents are set to factory default settings.

3. 2. ROM & RAM check

ROM executes the sum check, and RAM executes the matching test. The result will be notified with the number of short sounds of the buzzer as well as by printing the ROM & RAM check list.

Number of short sounds of buzzer 0 → No error
1 → ROM error
2 → RAM error (32Kbyte)

3. 3. Aging mode

If any document is first present, copying will be executed sheet by sheet. If no document is present, the check pattern will be printed sheet by sheet. This operation will be executed at a rate of one sheet per 5minutes, and will be ended at a total of 10 sheets.

3. 4. Panel check mode

The mode is used to check whether each key operates properly or not. Press the key on the operation panel, and the key will be displayed on the display. Therefore, press all keys. At this time, finally press the STOP key.

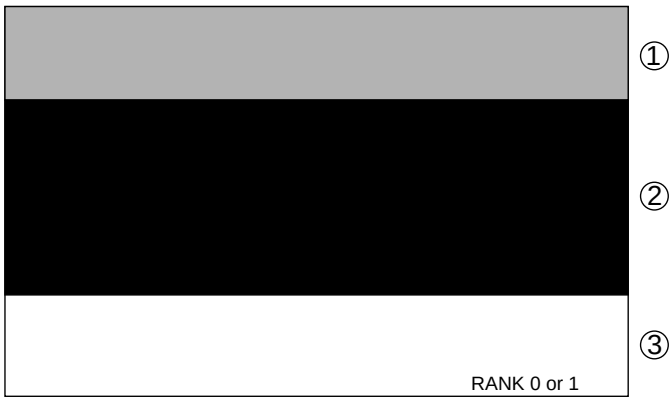
When the STOP key is pressed, the keys which are not judged as "pressed" will be printed on the result list.

- LED port of the contact image sensor (CIS) is kept on during the term from when start of the panel test mode to end with the STOP key.

3. 5. Check pattern mode

This mode is used to check the status of print head. Two sheets of check pattern are printed. The following information of check pattern is printed.

① Vertical stripes (alternate white and black lines)	Approx. 35 mm
② Full black	Approx. 70 mm
③ Full white	Approx. 35 mm



Note:
There is a selection RANK 0 or 1 depending on resistance value of the thermal head. RANK 0 or RANK 1 is printed at the tail of check pattern to identify.

3. 6. Signal send mode

The mode is used to send various signals to the circuit during FAX communication. Every push of START key sends a signal in the following sequence. Moreover, the signal sound is also output to the speaker when the line monitor of the soft switch is on.

[1] No signal (CML signal turned on)
[2] 9600bps
[3] 7200bps
[4] 4800bps
[5] 2400bps
[6] 300bps (FLAG)
[7] 2100Hz (CED)
[8] 1100Hz (CNG)
[9] END

3. 7. Memory clear mode

This mode is used to clear the backup memory and reset to the default settings.

3. 8. Shading mode

The mode is used for the shooting compensation. For reading, set up the special original paper.

The shooting compensation memorizes the reference data of white and black for reading.

Moreover, the memorized data is not erased even if memory clear mode is executed.

3. 9. All black mode

The mode is used to check the state of the printing head and intentionally overheat it. Whole dots are printed over the interval of 2 m. If it is overheated or the printing sheet is jammed, press STOP key for the end.

3. 10. Auto feeder mode

In this mode, a document is inserted and discharged to check the auto feed function.

After this mode is started, set a document, and the document feed will be automatically tested.

3. 11. Message print mode

Used to print the displayed message of communication for translate each language.

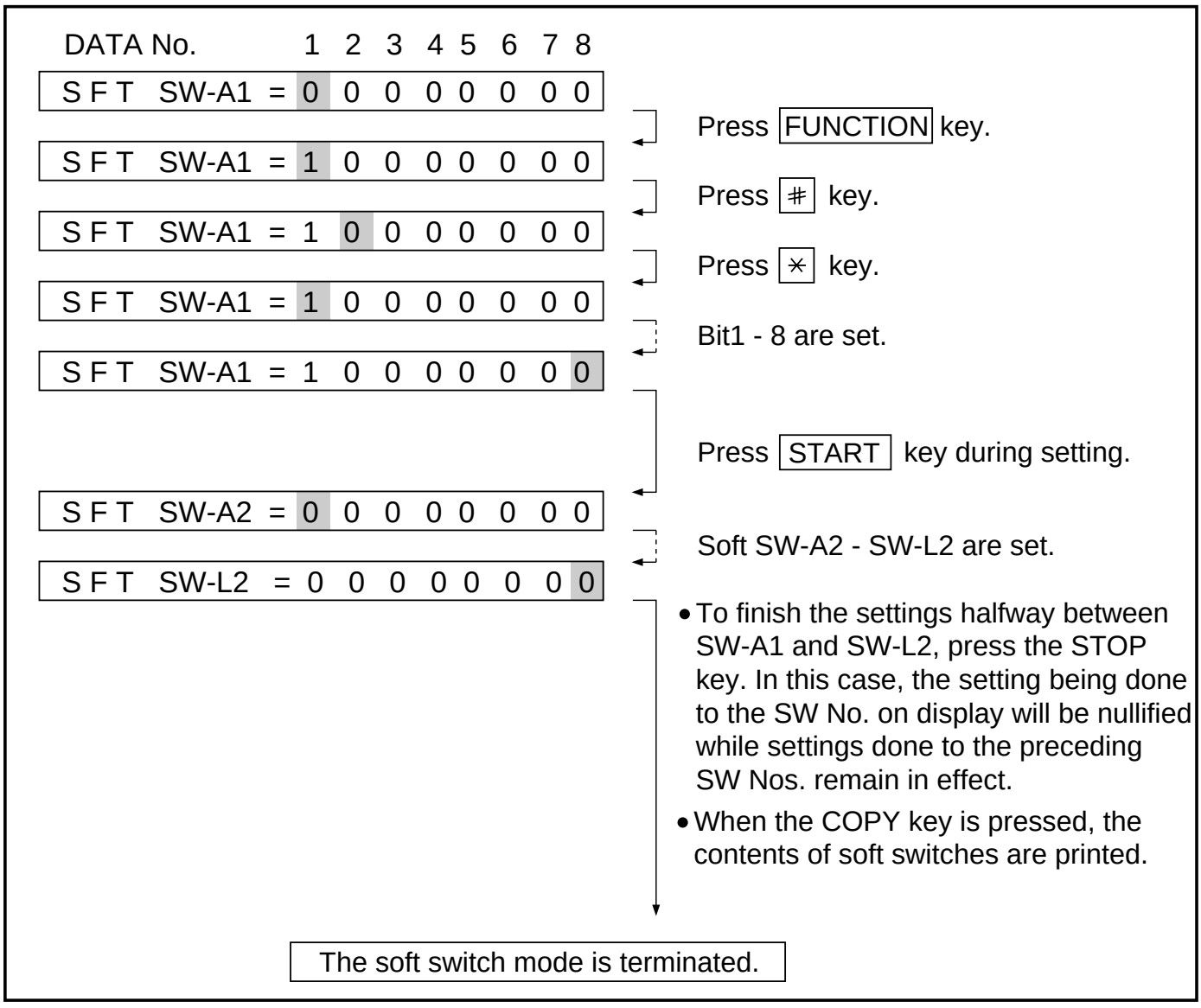
3. 12. Ring & Dial free mode

Used to reject dial tone check while autodialing is carried out. And used to change the bottom Ring frequency of auto-receiving to 13Hz.

4. How to make soft switch setting

To enter the soft switch mode, make the following key entries in sequence.

Press [FUNCTION] [9] [✳] [8] [#] [7] [START] [START]


DATA No. 1 2 3 4 5 6 7 8
S F T SW-A1 = 0 0 0 0 0 0 0 0
S F T SW-A1 = 1 0 0 0 0 0 0 0
S F T SW-A1 = 1 0 0 0 0 0 0 0
S F T SW-A1 = 1 0 0 0 0 0 0 0
S F T SW-A1 = 1 0 0 0 0 0 0 0
S F T SW-A2 = 0 0 0 0 0 0 0 0
S F T SW-L2 = 0 0 0 0 0 0 0 0
Press [FUNCTION] key.
Press [#] key.
Press [✳] key.
Bit1 - 8 are set.
Press [START] key during setting.
Soft SW-A2 - SW-L2 are set.
• To finish the settings halfway between SW-A1 and SW-L2, press the STOP key. In this case, the setting being done to the SW No. on display will be nullified while settings done to the preceding SW Nos. remain in effect.
• When the COPY key is pressed, the contents of soft switches are printed.
The soft switch mode is terminated.

5. Soft switch description

- **Soft switch**

SW NO.	DATA NO.	ITEM	Switch setting and function		Initial setting								Remarks
			1	0	DE								
SW I A1	1	Protect from echo	No	Yes	0								
	2	Forced 4800 BPS reception	Yes	No	0								
	3	Footer print	Yes	No	0								
	4	Length limitation of copy/send/receive	No limit	Copy/send: 60cm Receive: 1.5m	0								
	5	CSI transmission	No transmitted	Transmitted	0								
	6	DIS receive acknowledgement during G3 transmission	Twice	NSF: Once DIS: Twice	0								
	7	Non-modulated carrier for V29 transmission modem	Yes	No	0								
	8	EOL detect timer	25 s	13 s	0								
SW I A2		Modem speed		V.29 / V.27 ter									
				9600 / 7200 / 4800 / 2400									
	1		No. 1	0 / 0 / 0 / 0	0								
	2		No. 2	0 / 0 / 0 / 0	0								
	3		No. 3	0 / 1 / 1 / 0	0								
	4		No. 4	1 / 1 / 0 / 0	1								
	5	Sender's information transmit	No	Yes	0								
	6	H2 mode	No	Yes	0								
	7	Communication error treatment in RTN sending mode (reception)	No communication error	Communication error	0								
	8	CNG transmission	No	Yes	0								
SW I A3		CED tone signal interval		1000ms / 750ms / 500ms / 75ms									
	1		No. 1	1 / 1 / 0 / 0	0								
	2		No. 2	1 / 0 / 1 / 0	0								
	3	MR coding	No	Yes	0								
	4	Reserved			0								
	5	Reserved			0								
	6	Reserved			0								
	7	Reserved			0								
	8	Reserved			0								
SW I A4	1	Signal transmission level	Binary input		0								
	2		No. = 16 8 4 2 1		1								
	3		1 2 3 4 5		0								
	4		0 1 0 1 1 (-11dBm)		1								
	5				1								
	6	Protocol monitor (error print)	Printed at com. error	Not printed	0								
	7	Protocol monitor	Yes	No	0								
	8	Line monitor	Yes	No	0								
SW I A5		Digital line equalization setting		7.2km / 0km									
	1	(Reception)	No. 1	1 / 0	1								
	2		No. 2	1 / 0	1								
	3	Reserved			0								
	4	Reserved			0								
	5	Reserved			0								
	6	Reserved			0								
	7	Error criterion	10 ~ 20 %	5 ~ 10 %	0								
	8	Anti junk fax check	Yes	No	0								OPTION

SW NO.	DATA NO.	ITEM	Switch setting and function		Initial setting								Remarks
			1	0	DE								
SW I A6	1	Auto gain control (MODEM)	Enable	Disable	1								
	2	End Buzzer	Yes	No	1								
	3	Disconnect the line when DIS is received in RX mode	No	Yes	1								
	4	Equalizer freeze control (MODEM)	On	Off	0								
	5	Equalizer freeze control 7200 BPS only	No	Yes	0								
	6	CNG transmission in manual TX mode	Yes	No	1								
	7	Initial compression scheme for sharp fax in TX mode	MR mode	H2 mode	0								
	8	Reserved			0								
SW I B1	1	Reserved			0								
	2	Reserved			0								
	3	Reserved			0								
	4	Reserved			0								
	5	Recall times	Binary input		0								
	6		No. = 8 4 2 1		0								
	7		5 6 7 8		1								
	8		0 0 1 0 (Twice)		0								
SW I B2	1	Dial pausing (sec/pause)	4 sec	2 sec	1								
	2	Dial tone detection (before auto dial)	No	Yes	0								
	3	Reserved			0								
	4	Busy tone detection (after auto dial)	No	Yes	0								
	5	Waiting time after dialing	90 sec	45 sec	1								
	6	Reserved			0								
	7	Reserved			0								
	8	PBX connection	Yes	No	0								OPTION
SW I B3		PBX recall function (R key select)		No Ope. / No Ope. / Earth / Flash									OPTION
	1		No. 1	0 / 0 / 1 / 1	1								
	2		No. 2	0 / 1 / 0 / 1	1								
	3	Reserved			0								
		PBX select		ID / ID / Earth / Flash									OPTION
	4		No. 4	0 / 0 / 1 / 1	0								
	5		No. 5	0 / 1 / 0 / 1	0								
	6	Reserved			0								
	7	Reserved			0								
	8	Reserved			0								
SW I B4	1	Reserved			0								
	2	Reserved			0								
	3	Dial mode	Tone	Pulse	1								OPTION
	4	Pulse → Tone change function by ✳ key	Enable	Disable	1								
	5	Dial pulse make/break ratio (%)	40/60	33/67	1								
	6	Reserved			0								
	7	PBX type	ISDN	NORMAL	0								OPTION
	8	Reserved			0								

SW NO.	DATA NO.	ITEM	Switch setting and function		Initial setting								Remarks
			1	0	DE								
SW I B5	1	DTMF signal transmission level (Low)	Binary input		1								
	2		No. = 16 8 4 2 1		0								
	3		1 2 3 4 5		1								
	4		1 0 1 1 1 (0.5x10=-5dBm)		1								
	5				1								
	6	Reserved			0								
	7	Reserved			0								
	8	Reserved			0								
SW I B6	1	DTMF signal transmission level (High)	Binary input		1								
	2		No. = 16 8 4 2 1		0								
	3		1 2 3 4 5		1								
	4		1 0 1 0 0 (0.5x7=-3.5dBm)		0								
	5				0								
	6	Reserved			0								
	7	Reserved			0								
	8	Reserved			0								
SW I C1		Reading slice (Binary)		Factory setting / Light / Dark / Darker in dark mode									
	1		No. 1	0 / 1 / 0 / 1	0								
	2		No. 2	0 / 0 / 1 / 1	0								
		Reading slice (Half tone)		Factory setting / Light / Dark / Darker in dark mode									
	3		No. 3	0 / 1 / 0 / 1	0								
	4		No. 4	0 / 0 / 1 / 1	0								
	5	Line density selection	Fine	Standard	0								OPTION
	6	Halftone gray scale selection	16 level	64 level	0								OPTION
	7	MTF correction in half tone mode	No	Yes	0								
	8	Reserved			0								
SW I D1	1	Number of rings for auto receive	Binary input		0								OPTION
	2		No. = 8 4 2 1		0								
	3		1 2 3 4		0								
	4		0 0 0 1 (4 times)		1								
	5	Automatic switching manual to auto receive mode	Reception after 5 rings	No reception	0								
	6	Reserved			0								
	7	CI detection	13 Hz or more	As is PTT	0								
	8	Reserved			0								
SW I D2	1	Reserved			0								
	2	Reserved			0								
	3	Reserved			0								
	4	Reserved			0								
	5	Reserved			0								
	6	Reserved			0								
	7	Reserved			0								
	8	Reserved			0								
SW I E1	1	Tel/Fax Automatic switching mode	Enable	Disable	1								
		Pseudo ringing time at phone/fax automatic switching mode		15sec / 60sec / 30sec / 120sec									OPTION
	2		No. 2	0 / 0 / 1 / 1	0								
	3		No. 3	0 / 1 / 0 / 1	0								
	4	Number of CNG signal detection at the phone/fax automatic switching mode	Twice	Once	1								
	5	Reserved			0								
	6	Reserved			0								
	7	Post answer tone (transmit in Tel/Fax mode)	No	Yes	0								
	8	Reserved			0								

SW NO.	DATA NO.	ITEM	Switch setting and function								Initial setting								Remarks
			1						0		DE								
SW I E2	1	Pseudo ringer sound output level to the line	Binary input								0								
	2		No. =	8	4	2	1				1								
	3			1	2	3	4				0								
	4			0	1	0	1	(-5dBm -5=-10dBm)			1								
			(-5 ~ -20dBm setting)																
	5	Reserved									0								
	6	Reserved									0								
	7	Reserved									0								
	8	Reserved									0								
SW I F1		DTMF detection time		50ms		80ms		100ms		120ms									
	1		No. 1	0		0		1		1	0								
	2		No. 2	0		1		0		1	0								
	3	Protection of remote reception (5 ✳) detect	Yes						No		0								OPTION
	4	Remote reception with GE telephone	Compatible						Not compatible		1								
	5	Remote operation code figures by external TEL (0~9)	Binary input								0								OPTION
	6		No. =	8	4	2	1				1								
	7			5	6	7	8				0								
	8			0	1	0	1	(5 ✳)			1								
SW I F2	1	CNG detection in STAND-BY mode	Yes						No		1								OPTION
		Number of CNG detect (AM mode)		1pulse		2pulses		3pulses		4pulses									
	2		No. 2	0		0		1		1	0								
	3		No. 3	0		1		0		1	1								
		Number of CNG (STAND-BY mode)		1pulse		2pulses		3pulses		4pulses									
	4		No. 4	0		0		1		1	0								
	5		No. 5	0		1		0		1	1								
	6	Fax signal detection after telephone mode dial	Yes						No		0								
	7	Reserved									0								
	8	Reserved									0								
SW I G1	1	Quiet detect time	Binary input								0								OPTION
	2		No. =	8	4	2	1				1								
	3			1	2	3	4				1								
	4			0	1	1	0	(4 sec)			0								
	5	Quiet detect start timing	Binary input								0								OPTION
	6		No. =	8	4	2	1				0								
	7			5	6	7	8				0								
	8			0	0	0	0	(5 sec)			0								
SW I G2	1	Off hook hold	Binary input								0								OPTION
	2		No. =	128	64	32	16	8	4	2	1	0							
	3			1	2	3	4	5	6	7	8	0							
	4			0	0	0	0	0	0	0	0	0							
	5		(0 sec = No limit)									0							
	6											0							
	7											0							
	8											0							
SW I G3		OGM detect timer		Not Work		100ms		200ms		300ms									
	1		No. 1	0		0		1		1	0								
	2		No. 2	0		1		0		1	1								
	3	Reserved									0								
	4	Reserved									0								
		Section time of quiet detection		30s		40s		50s		60s									
	5		No. 5	0		0		1		1	0								
	6		No. 6	0		1		0		1	1								
	7	Reserved									0								
	8	Reserved									0								

SW NO.	DATA NO.	ITEM	Switch setting and function					Initial setting								Remarks
			1				0	DE								
SW I H1	1	Reserved						0								
	2	Reserved						0								
	3	Reserved						0								
	4	Busy tone continuous sound detect time	5 sec				10 sec	1								
	5	Reserved						0								
	6	Busy tone detect continuation sound detect	No				Yes	0								
	7	Reserved						0								
	8	Busy tone detect intermittent sound detect	No				Yes	0								
SW I H2	1	Busy tone detection pulse number		2pulses	4pulses	6pulses	10pulses									
			No. 1	0	0	1	1	0								
	2		No. 2	0	1	0	1	1								
	3	Fax switching when A.M. full	Yes				No	0								OPTION
	4	Reserved						0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								
SW I I1	1	Reserved						0								
	2	Reserved						0								
	3	Reserved						0								
	4	Reserved						0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								
SW I I2	1	Reserved						0								
	2	Reserved						0								
	3	Reserved						0								
	4	Reserved						0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								
SW I I3	1	Reserved						0								
	2	Reserved						0								
	3	Reserved						0								
	4	Reserved						0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								
SW I I4	1	Reserved						0								
	2	Reserved						0								
	3	Reserved						0								
	4	Reserved						0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								

SW NO.	DATA NO.	ITEM	Switch setting and function					Initial setting								Remarks
			1				0	DE								
SW I I5	1	Reserved						0								
	2	Reserved						0								
	3	Reserved						0								
	4	Reserved						0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								
SW I I6	1	Reserved						0								
	2	Reserved						0								
	3	Reserved						0								
	4	Reserved						0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								
SW I I7	1	Reserved						0								
	2	Reserved						0								
	3	Reserved						0								
	4	Reserved						0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								
SW I J1	1	Reserved						0								
	2	Reserved						0								
	3	Sender’s phone number setting	Cannot change				Change allowed	0								
	4	Reserved						0								
	5	Reserved						0								
	6	Summer time setting	No				Yes	0								
		Ringer volume		Off	Low	Middle	High									OPTION
	7		No. 7	0	0	1	1	1								
	8		No. 8	0	1	0	1	0								
SW I J2		Speaker volume		Low	Low	Middle	High									OPTION
	1		No. 1	0	0	1	1	1								
	2		No. 2	0	1	0	1	0								
	3	Polling key	Yes			No		0								OPTION
	4	Reserved						0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								
SW I J3	1	Reserved						0								
	2	Reserved						0								
		Communication results printout		Error/Timer	Send only	Always	No print									OPTION
	3	(Transaction report)	No. 3	0	0	1	1	0								
	4		No. 4	0	1	0	1	0								
	5	Reserved						0								
	6	Reserved						0								
	7	Reserved						0								
	8	Reserved						0								

SW NO.	DATA NO.	ITEM	Switch setting and function		Initial setting								Remarks
			1	0	DE								
SW I K1	1	Entering DIAG mode by pressing SPEED key	Yes	No	0								
	2	Reserved			0								
	3	Reserved			0								
	4	Reserved			0								
	5	Reserved			0								
	6	Reserved			0								
	7	Reserved			0								
	8	Reserved			0								
SW I L1	1	Reserved			0								
	2	Reserved			0								
	3	Reserved			0								
	4	Reserved			0								
	5	Reserved			0								
	6	Reserved			0								
	7	Reserved			0								
	8	Reserved			0								
SW I L2	1	Reserved			0								
	2	Reserved			0								
	3	Reserved			0								
	4	Reserved			0								
	5	Reserved			0								
	6	Reserved			0								
	7	Reserved			0								
	8	Reserved			0								

• Soft switch function description

SW-A1 No. 1 Protect from echo

Used to protect from echo in reception.

SW-A1 No. 2 Forced 4800BPS reception

When line conditions warrant that receptions take place at 4800 BPS repeatedly.

It may improve the success of receptions by setting at 4800BPS.

This improve the receiving document quality and reduces handshake time due to fallback during training.

SW-A1 No. 3 Footer print

When set to "1", the date of reception, the sender machine No., and the page No. are automatically recorded at the end of reception.

SW-A1 No. 4 Length limitation of copy/send/receive

Used to set the maximum page length.

To avoid possible paper jam, the page length is normally limited to 0.6 meter for copy or transmit, and 1.5 meters for receive.

It is possible to set it to "No limit" to transmit a long document, such as a computer print form, etc. (In this case, the receiver must also be set to no limit.)

SW-A1 No. 5 CSI transmission

(CSI TRANSMISSION) is a switch to set whether the machine sends or does not send the signal (CSI signal) informing its own telephone No. to the remote fax. machine when information is received. When "nonsending" is set, the telephone No. is not output on the remote transmitting machine if the remote transmitting machine has the function to display or print the telephone No. of receiving machine, using this CSI signal.

SW-A1 No. 6 DIS receive acknowledgment during G3 transmission

Used to make a choice of whether reception of DIS (NSF) is acknowledged after receiving two DISs (NSFs) or receiving one DIS (two NSFs). It may be useful for overseas communication to avoid an echo suppression problem, if set to 1.

SW-A1 No. 7 Non-modulated carrier for V29 transmission modem

Though transmission of a non-modulated carrier is not required for transmission by the V29 modem according to the CCITT recommendation, it may be permitted to a send non-modulated carrier before the image signal to avoid and echo suppression problem. It may be useful for overseas communication to avoid an echo suppression problem, if set to 1.

SW-A1 No. 8 EOL (End Of Line) detect timer

Used to make a choice of whether to use the 25-second or 13-second timer for detection of EOL.
This is effective to override communication failures with some facsimile models that have longer EOL detection.

SW-A2 No. 1 ~ No. 4 Modem speed

Used to set determine the initial modem speed. The default is 9600BPS. It may be necessary to program it to a slower speed when frequent line fallback is encountered, in order to save the time required for fallback procedure.

SW-A2 No. 5 Sender's information transmit

(SENDER'S INFORMATION TRANSMISSION) is a switch to set the function to print the content of HEADER PRINT described in the passcode list at the front end of receiver's original when original is sent to the remote machine.

If this switch is set to "NO", the HEADER PRINT is not output at the receiving machine.

SW-A2 No. 6 H2 mode

Used to determine reception of H2 mode (15 sec transmission mode). When set to OFF, H2 mode reception is inhibited even though the transmitting machine has H2 mode function.

SW-A2 No. 7 Communication error treatment in RTN sending mode (Reception)

Used to determine communication error treatment when RTN is sent by occurrence of a received image error in G3 reception. When it is set to "1", communication error is judged as no error.

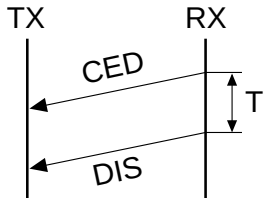
SW-A2 No. 8 CNG transmission

When set to "0" , this model allows CNG transmission by pressing the Start key in the key pad dialing mode. When set to "1", CNG transmission in the key pad dialing mode cannot be performed. In either case, CNG transmission can be performed in the auto dial mode.

SW-A3 No. 1, No. 2 CED tone signal interval

For international communication, the 2100Hz CED tone may act as an echo suppression switch, causing a communication problem.

Though SW-A3 No. 1 and No. 2 are normally set to 0, it should be changed this time between the CED tone signal to eliminate the communication problem caused by echo.



SW-A3 No. 3 MR Coding

Used to select the MR coding enable or disable.

SW-A3 No. 4 ~ No. 8 Reserved

Set to "0".

SW-A4 No. 1 ~ No. 5 Signal transmission level

Used to control the signal transmission level in the range of-0dB to-31dB.

The factory setting is at -11dB (MODEM output).

SW-A4 No. 6 Protocol monitor (Error print)

If set to "1", protocol is printed at communication error.

SW-A4 No. 7 Protocol monitor

Normally set to "0". If set to "1", communication can be checked, in case of troubles, without using a G3 tester or other tools.
When communication FSK data transmission or reception is made, the data is taken into the buffer. When communication is finished, the data is analyzed and printed out. When data is received with the line monitor (SW-A4 No. 8) set to "1" the reception level is also printed out.

SW-A4 No. 8 Line monitor

Normally set to "0". If set to "1", the transmission speed and the reception level are displayed on the LCD. Used for line tests.

SW-A5 No. 1, No. 2 Digital line equalization setting (Reception)

Line equalization when reception is to be set according to the line characteristics.

Setting should be made according to distance between the telephone and the telephone company central switching station.

SW-A5 No. 3 ~ No. 6 Reserved

Set to "0".

SW-A5 No. 7 Error criterion

Used to select error criterion for sending back RTN when receiving image data.

SW-A5 No. 8 Anti junk fax check

When use the Anti junk fax function, set to "1".

SW-A6 No. 1 Auto gain control (MODEM)

When this mode is enabled, if the reception signal level is under 31dBm. The modem itself controls the signal gain automatically.

SW-A6 No. 2 End buzzer

Setting this bit to 0 will disable the end buzzer (including the error buzzer/ on-hook buzzer).

SW-A6 No. 3 Disconnect the line when DIS is received in RX mode

Bit1= 0: When DIS signal is received during RX mode, disconnected the line is immediately.

Bit1= 1: When DIS signal is received during RX mode, wait the next signal.

SW-A6 No. 4 Equalizer freeze control (MODEM)

This switch is used to perform reception operation by fixing the equalizer control of modem for the line which is always in unfavorable state and picture cannot be received.

* Usually, the control is executed according to the state of line where the equalizer setting is changed always.

SW-A6 No. 5 Equalizer freeze control 7200BPS only

Setting which specifies SW-A3 No. 6 control only in the condition of 7200BPS modem speed.

SW-A6 No. 6 CNG transmission in manual TX mode

When set to "1", fax transmit the CNG signal in case of manual transmission mode (User press the START key after waiting the fax answering signal from handset or speaker).

SW-A6 No. 7 Initial compression scheme for sharp fax in TX mode

When set to "0", if the other fax is Sharp model, fax transmit the document by H2 mode. When set to "1", even if the other fax is Sharp model, fax transmit the document by MR mode.

SW-A6 No. 8 Reserved

Set to "0".

SW-B1 No. 1 ~ No. 4 Reserved

Set to "0".

SW-B1 No. 5 ~ No. 8 Recall times

Choice is made as to how many redials should be.

SW-B2 No. 1 Dialing pause (sec/pause)

Pauses can be inserted between telephone numbers of direct dial connection. Selection of 4 sec or 2 sec pause is available.

SW-B2 No. 2 Dial tone detection (before auto dial)

Used to set YES/NO of dial tone detection in auto dialing.

SW-B2 No. 3 Reserved

Set to "0".

SW-B2 No. 4 Busy tone detection (after auto dial)

Used to set YES/NO of busy tone detection after auto dialing.

SW-B2 No. 5 Waiting time after dialing

This is waiting time for the opponent's signals after dialing.

When set to "0", waiting time is 45 sec.

When set to "1", waiting time is 90 sec.

SW-B2 No. 6, No. 7 Reserved

Set to "0".

SW-B2 No. 8 PBX connection

Used to select according to the connected line: PBX (Private Branch Exchange).

SW-B3 No. 1, No. 2 PBX recall function (R key select)

Used to set the operation mode of PBX recall when the R key is pressed. Setting is made according to the type of PBX.

No. 1=1, No. 2=1: Time break recall (=Flash) is performed.

No. 1=1, No. 2=0: Earth recall is performed.

SW-B3 No. 3 Reserved

Set to "0".

SW-B3 No. 4, No. 5 PBX select

Used to select the operation mode of PBX recall in auto dialing.

No. 4=1, No. 5=1: Time break recall (=Flash) is performed before dialing.

No. 4=1, No. 5=0: Earth recall is performed before dialing.

No. 4=0, No. 5=0: The PBX ID digit is automatically added when dialing to external line. PBX ID is up to 3 digits and entered in Option settings mode.

SW-B3 No. 6 Reserved

Set to "0".

SW-B3 No. 7 PBX type

Used to select type of PBX.

"0": NORMAL

"1": ISDN

SW-B3 No. 8 Reserved

Set to "0".

SW-B4 No. 1, No. 2 Reserved

Set to "0".

SW-B4 No. 3 Dial mode

When using the pulse dial, set to 0. When using the tone dial, set to 1.

SW-B4 No. 4 Pulse → Tone change function by ⋇ key

When setting to 1, the mode is changed by pressing the ⋇ key from the pulse dial mode to the tone dial mode.

SW-B4 No. 5 Dial pulse make/break ratio (%)

When using the 33 % make ratio pulse dial, set to "0".
When using the 40 % make ratio pulse dial, set to "1".

SW-B4 No. 6 Reserved

Set to "0".

SW-B4 No. 7 PBX type

Used to select type of PBX

"0": NORMAL

"1": ISDN

SW-B4 No. 8 Reserved

Set to "0".

SW-B5 No. 1 ~ No. 5 DTMF signal transmission level (Low)

The transmission level of DTMF signal is adjusted. (lower frequency)

00000: 0dBm

↓

11111: -15.5dBm (-0.5dBm x 31)

SW-B5 No. 6 ~ No. 8 Reserved

Set to "0".

SW-B6 No. 1 ~ No. 5 DTMF signal transmission level (High)

The transmission level of DTMF signal is adjusted. (higher frequency)

00000: 0dBm

↓

11111: -15.5 dBm (-0.5dBm x 31)

SW-B6 No. 6 ~ No. 8 Reserved

Set to "0".

SW-C1 No. 1, No. 2 Reading slice (Binary)

Used to determine the set value of reading density in standard/fine mode. The standard setting is "00" (Factory setting is "00")

SW-C1 No. 3, No. 4 Reading slice (Half tone)

Used to determine the set value of reading density in half tone mode. The standard setting is "00" (Factory setting is "00")

SW-C1 No. 5 Line density selection

Used to set the transmission mode which is automatically selected when the Resolution key is not pressed. In the copy mode, however, the fine mode is automatically selected unless the Resolution key is manually set to another mode.

SW-C1 No. 6 Half tone gray scale selection

Used to determine the reading gray scale in half tone mode.

When set to "0", gray scale is 64 levels.

When set to "1", gray scale is 16 levels.

SW-C1 No. 7 MTF correction in half tone mode

This allows selection of MTF correction (dimness correction) in the half tone mode.

When "NO" (=1) is selected, the whole image becomes soft and mild. On the contrary, however, clearness of characters will be reduced. Normally set to "YES" (=0).

SW-C1 No. 8 Reserved

Set to "0".

SW-D1 No. 1 ~ No. 4 Number of rings for auto receive

When the machine is set in the auto receive mode, the number of rings before answering can be selected. It may be set from one to four rings using a binary number. Since the facsimile telephone could be used as an ordinary telephone if the handset is taken off the hook, it should be programmed to the user's choice. If the soft switch was set to 1, direct connection is made to the facsimile. If a facsimile calling beep was heard when the handset is taken off the hook, press the START key and put the handset on the hook to have the facsimile start receiving. If it was set to 0 accidentally, receive ring is set to 1.

NOTE: If the machine is set to answer after a large number of rings, it may not be able to receive faxes successfully. If you have difficulty receiving faxes, reduce the number of rings to a maximum of 5.

SW-D1 No. 5 Automatic switching manual to auto receive mode

This soft switch is used to select whether the machine should switch to the auto receive mode after 5 rings in the manual receive mode or remain in the same way as SW-D1 No. 1, No. 2, No. 3 and No. 4 "0"1"0"1"(5 rings).

SW-D1 No. 6 Reserved

Set to "0".

SW-D1 No. 7 CI detection

Detection frequency of ring signal for auto reception is set. When set to 1, frequency is set to 13Hz or more.

SW-D1 No. 8 Reserved

Set to "0".

SW-D2 No. 1 ~ No. 8 Reserved

Set to "0".

SW-E1 No. 1 Tel/Fax Automatic switching mode

Used to set auto TEL/FAX switching mode or to set the normal fax mode.

SW-E1 No. 2, No. 3 Pseudo ringing time at the phone/fax automatic switching mode

Choice is made as to how long to rumble the dummy ringer on TEL/FAX automatic switching mode.

SW-E1 No. 4 Number of CNG signal detection at the phone/fax automatic switching mode

Used for detection of CNG in one tone or two tones in the TEL/FAX automatic switching mode.

SW-E1 No. 5, No. 6 Reserved

Set to "0".

SW-E1 No. 7 Post answer tone transmit in Tel/Fax mode

When set to "0", machine send the 800 Hz tones in TEL/FAX auto changeover mode.

SW-E1 No. 8 Reserved

Set to "0".

SW-E2 No. 1 ~ No. 4 Pseudo ringer sound output level to the line

Used to adjust sound volume of pseudo ringer to the line (ring back tone) generated on selecting TEL/FAX. Setting is the reduce level from -5dBm output level.

SW-E2 No. 5 ~ No. 8 Reserved

Set to "0".

SW-F1 No. 1, No. 2 DTMF detect time

Used to set detect time of DTMF (Dual Tone Multi Frequency) used in remote reception (5 ✳ ✳).

The longer the detect time is, the less the error detection is caused by noises.

SW-F1 No. 3 Protection of remote reception (5 ✳ ✳) detect

Used to set the function of remote reception (5 ✳ ✳). When set to "1", the remote reception function is disabled.

SW-F1 No. 4 Remote reception with GE telephone

(Corresponding to TEL made by GE) P. B. X.

"1": Compatible with TEL mode by GE

"0": Not compatible

- When sending (5 ✳ ✳) for remote reception with a GE manufactured telephone remote reception may not take place because of special specifications in their DTMF.
  To overcome this, a soft SW is provided to change the modem setting to allow for remote reception.
- If this soft SW is set to "1", other telephone sets may be adversely affected.

SW-F1 No. 5 ~ No. 8 Remote operation code figures by external TEL (0 ~ 9)

Remote operation codes can be changes from 0 through 9. If set to greater than 9, it defaults to 9. The "5 ✳ ✳ " is not changed.
Ex-7 ✳ ✳ (Default: 5 ✳ ✳)

SW-F2 No. 1 CNG detection in STAND-BY mode

When setting to "1", the CNG signal detection function during standby stops.

SW-F2 No. 2, No. 3 Number of CNG detect (AM mode)

Used for detection of CNG in 1 to 4 pulses.

SW-F2 No. 4, No. 5 Number of CNG (STAND-BY mode)

Used for detection of CNG in 1 to 4 pulses.

SW-F2 No. 6 Fax signal detection after telephone mode dial

When set to "1", if machine detect the fax answering signal after telephone calling (handset off-hook or speaker mode dial), machine start to receive the documents automatically.

SW-F2 No. 7, No. 8 Reserved

Set to "0".

SW-G1 No. 1 ~ No. 4 Quiet detect time

When an answering machine is connected, if a no sound state is detected for a certain period of time, the machine judges it as a transmission from a facsimile machine and automatically switches to the FAX mode.

SW-G1 No. 5 ~ No. 8 Quiet detect start timing

Inserts a pause before commencing quiet detection.

SW-G2 No. 1 ~ No. 8 Off hook hold

Used to set Off hook hold time by binary input.

(0 to 255 seconds)

SW-G3 No. 1, No. 2 OGM detect timer

This is used to change the OGM detection time for answering machine hook up detection.

SW-G3 No. 3, No. 4 Reserved

Set to "0".

SW-G3 No. 5, No. 6 Section time of quiet detection

The switch which sets the time from the start of detection function to the end of the function.

SW-G3 No. 7, No. 8 Reserved

Set to "0".

SW-H1 No. 1 ~ No. 3 Reserved

Set to "0".

SW-H1 No. 4 Busy tone continuous sound detect time

Set detecting time busy tone continuous sound for 5 seconds or 10 seconds.

SW-H1 No. 5 Reserved

Set to "0".

SW-H1 No. 6 Busy tone detect continuation sound detect

Used to select detection of the continuous sound of certain frequency.

SW-H1 No. 7 Reserved

Set to "0".

SW-H1 No. 8 Busy tone detect intermittent sound detect

Used to select detection of the intermittent sound of certain frequency.

SW-H2 No. 1, No. 2 Busy tone detection pulse number

Used to set detection of Busy tone intermittent sounds.

SW-H2 No. 3 Fax switching when A.M. full

If the answering machine's memory (tape) is full and there is no response, the machine automatically switches to Fax reception.

SW-H2 No. 4 ~ No. 8 Reserved

Set to "0".

SW-I1 No. 1 ~ No. 8 Reserved

Set to "0".

SW-I2 No. 1 ~ No. 8 Reserved

Set to "0".

SW-I3 No. 1 ~ No. 8 Reserved

Set to "0".

SW-I4 No. 1 ~ No. 8 Reserved

Set to "0".

SW-I5 No. 1 ~ No. 8 Reserved

Set to "0".

SW-I6 No. 1 ~ No. 8 Reserved

Set to "0".

SW-I7 No. 1 ~ No. 8 Reserved

Set to "0".

SW-J1 No. 1, No. 2 Reserved

Set to "0".

SW-J1 No. 3 Sender's phone number setting

Used to make a choice of whether the registered sender's phone number can be changed or not. If the switch is set to "1", new registration of the sender's phone number is disabled to prevent accidental wrong input.

SW-J1 No. 4, No. 5 Reserved

Set to "0".

SW-J1 No. 6 Summer time setting

Used to set YES/NO of automatic clock adjustment for summer time.

SW-J1 No. 7, No. 8 Ringer volume

Used to adjust ringing volume.

SW-J2 No. 1, No. 2 Speaker volume

Used to adjust sound volume from a speaker.

SW-J2 No. 3 Polling key

If this switch is set to 1, the last of Rapid key works as polling key.

SW-J2 No. 4 ~ No. 8 Reserved

Set to "0".

SW-J3 No. 1, No. 2 Reserved

Set to "0".

SW-J3 No. 3, No. 4 Communication result printout (Transaction report)

It is possible to obtain transaction results after each communication. Normally, the switch is set (No. 1: 0, No. 2: 0) so that the transaction report is produced only when a communication error is encountered. If No. 1 was set to 1 and No. 2 to 0, the transaction report will be produced every time a communication is done, even if the communication was successful.
Setting No. 1 to 1 and No. 2 to 1 will disable this function. No transaction report printed.

SW-J3 No. 5 ~ No. 8 Reserved

Set to "0".

SW-K1 No. 1 Entering DIAG mode by pressing SPEED key

A bit which is used in the production process only. When the SPEED key is pressed, the switch is changed from the stand-by state to the DIAG mode.

SW-K1 No. 2 ~ No. 8 Reserved

Set to "0".

SW-L1 No. 1 ~ No. 8 Reserved

Set to "0".

SW-L2 No. 1 ~ No. 8 Reserved

Set to "0".

[3] Troubleshooting

Refer to the following actions to troubleshoot any of problems mentioned in 1-4.

[1] A communication error occurs.

[2] Image distortion produced.

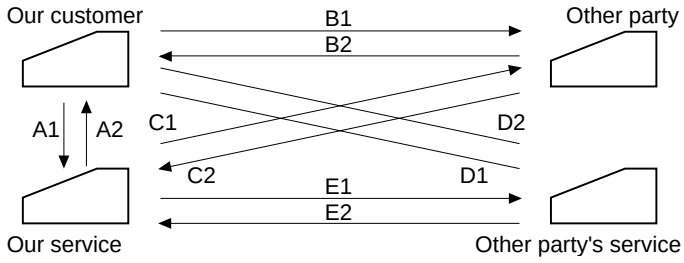
[3] Unable to do overseas communication.

[4] Communication speed slow due to FALLBACK.

- Increase the transmission level SOFT SWITCH A4-1, 2, 3, 4, 5. May be used in case [1] [2] [3].
- Decrease the transmission level SOFT SWITCH A4-1, 2, 3, 4, 5. May be used in case [3].
- Apply line equalization SOFT SWITCH A5-1, 2. May be used in case [1] [2] [3] [4].
- Slow down the transmission speed SOFT SWITCH A2-1, 2, 3, 4. May be used in case [2] [3].
- Replace the TEL/LIU PWB. May be used in all cases.
- Replace the control PWB. May be used in all cases.

* If transmission problems still exist on the machine, use the following format and check the related matters.

TO: ATT: Ref.No. :
CC: ATT: Date :
FM: Dept :
Sign :

***** Facsimile communication problem *****			Ref.No.:
From: Mr.	Fax Tel No.:		Date:
Our customer	Name		Tel No.
	Address		Fax No.
	Contact person		Model name
Other party	Name		Tel No.
	Address		Fax No.
	Contact person		Model name
Problem mode	Line: Domestic / international	Model: G3	Phase: A, B, C, D.
	Reception / Transmission	Automatic reception / Manual reception Automatic dialing / Manual dialing / Others	
Frequency:		% ROM version:	
Confirmation item			Please mark problem with an X. No problem is: 0. A1 A2 B1 B2 C1 C2 D1 D2 E1 E2 Transmission level setting is ( ) dB at our customer Transmission level ( ) dBm Reception level ( ) dBm By level meter at B1 and B2
Comment			
Countermeasure			
**** Please attach the G3 data and activity report on problem. ****			

* Please complete this report before calling the “TAC” hotline if problem still occurs.

[4] Error code table

1. Communication error code table

G3 Transmission

Code	Final received signal	Error Condition (Receiver side)
0	Incomplete signal frame	Cannot recognize bit stream after flag
1	NSF, DIS	Cannot recognize DCS signal by echo etc. Cannot recognize NSS signal (FIF code etc)
2	CFR	Disconnects line during reception (carrier missing etc)
3	FTT	Disconnects line by fall back
4	MCF	Disconnects line during reception of multi page Cannot recognize NSS, DCS signal in the case of mode change
5	PIP or PIN	The line is hung up without replying to telephone request from the receiving party.
6	RTN or RTP	Cannot recognize NSS, DCS signal after transmit RTN or RTP signal.
7	No signal or DCN	No response in receiver side or DCN signal received* (transmitter side)
8	–	Owing to error in some page the error could not be corrected although the specified number of error retransmission was at tempted.
11	–	Error occurred after or while reception by the remote (receiving) machine was revealed to be impossible.
12	–	Error occurred just after fallback.
13	–	Error occurred after a response to retransmission end command was received.

G3 Reception

Code	Final received signal	Error Condition (Receiver side)
0	Incomplete signal frame	Cannot recognize bit stream after flag
1	NSS, DCS	Cannot recognize CFR or FTT signal Disconnects line during transmission (line error)
2	NSC, DTC	Cannot recognize NSS signal (FIF code etc)
3	EOP	Cannot recognize MCF, PIP, PIN, RTN, RTP signal
4	EOM	Cannot recognize MCF, PIP, PIN, RTN, RTP signal in the case of mode change
5	MPS	The line is hung up without replying to communication request.
6	PR1-Q	Cannot recognize PIP, PIN signal in the case of TALK request
7	No signal or DCN	No response in transmitter (cannot recognize DIS signal) or DCN signal received* (receiver side)
8	–	Error occurred upon completion of reception of all pages.
9	–	Error occurred when mode was changed or Transmission/Reception switching was performed.
10	–	Error occurred during partial page or physical page reception.
11	–	Error occurred after or during inquiry from the remote (transmitting) machine as to whether reception is possible or not.
12	–	Error occurred during or just after fallback.
13	–	Error occurred after the retransmission end command was received.

CHAPTER 3. MECHANISM BLOCKS

[1] General description

1. Document feed block and diagram

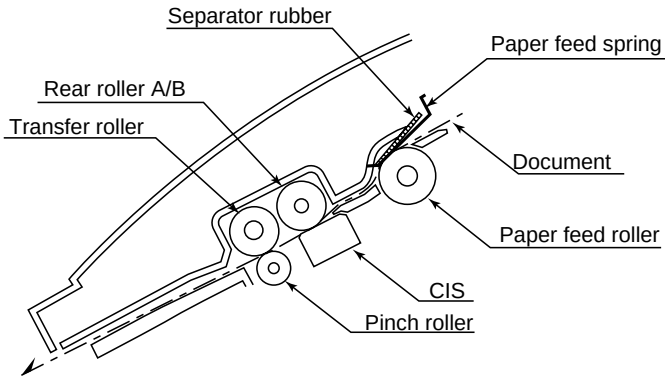


Fig. 1

2. Document feed operation

1) The document placed in the hopper actuates the document sensor. After one second, the pulse motor starts to drive the paper feed roller. The document is automatically taken up into the machine, and stopped at the document sensor.
2) When a specified number of pulses are received from the document sensor after the document lead edge is sensed, scanning is started.
3) When a specified number of pulses are received from the document sensor after the document rear edge is sensed, scanning is terminated and the document is fed through.
4) If the document sensor is active (i.e., another document is in the hopper), when the preceding document scanning is completed and it is fed out, the next document is taken up into the machine. If the document sensor is not active (i.e., there is no document in the hopper), when the document is fed out, the operation is terminated.

3. Hopper mechanism

3-1. General view

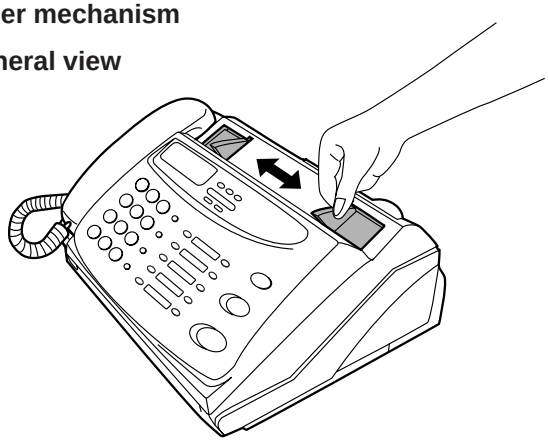


Fig. 2

The hopper is used to align documents with the document guides adjusted to the paper width.
NOTE: Adjust the document guide after setting up the document.

3-2. Automatic document feed

1) Use of the paper feed roller and separation rubber plate ensures error-free transport and separation of documents. The plate spring presses the document to the paper feed roller to assure smooth feeding of the document.
2) Document separation method: Separation rubber plate

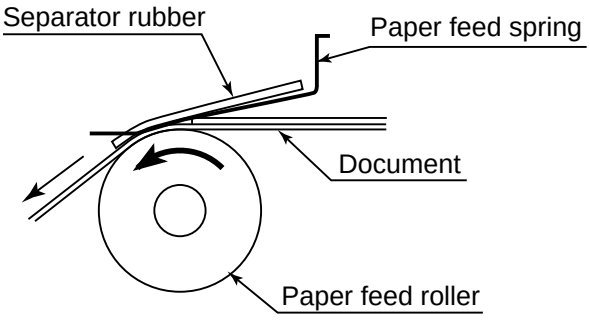


Fig. 3

3-3. Documents applicable for automatic feed

	4x6 series (788mm x 1091mm x 1000mm sheets)		Square meter series	
	Minimum	Maximum	Minimum	Maximum
Feeder capacity	10 sheets, max.			
Paper weight	45kg	64.3kg	52g/m^2	74.3g/m^2
Paper thickness (ref.)	0.06mm	0.09mm	0.06mm	0.09mm
Paper size	1/2 Letter (148mm x 140mm) ~ A4 (210mm x 297mm), Letter (216mm x 279mm)			

NOTE: Double-side coated documents and documents on facsimile recording paper should be inserted manually. The document feed quantity may be changed according to the document thickness.

Documents corresponding to a paper weight heavier than 64.3kg (74.3g/m^2) and lighter than 135kg (157g/m^2) are acceptable for manual feed.

Documents heavier than 135kg in terms of the paper weight must be duplicated on a copier to make it operative in the facsimile.

3-4. Loading the documents

1) Make sure that the documents are of suitable size and thickness, and free from creases, folds, curls, wet glue, wet ink, clips, staples and pins.
2) Place documents face down in the hopper.
   i) Adjust the document guides to the document size.
   ii) Align the top edge of documents and gently place them into the hopper. The first page under the stack will be taken up by the feed roller to get ready for transmission.

NOTES: 1) Curled edge of documents, if any, must be straighten out.
2) Do not load the documents of different sizes and/or thicknesses together.

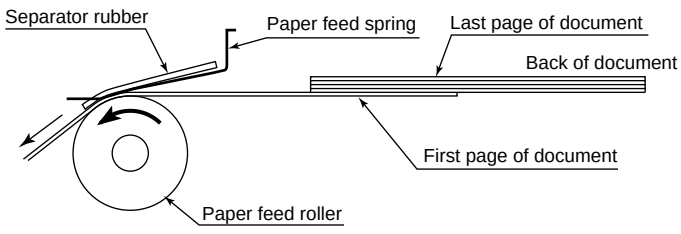


Fig. 4

3-5. Documents requiring use of document carrier

1) Documents smaller than B6 (128mm x 182mm).
2) Documents thinner than the thickness of 0.06mm.
3) Documents containing creases, folds, or curls, especially those whose surface is curled (maximum allowable curl is 5mm).
4) Documents containing tears.
5) Carbon-backed documents. (Insert a white sheet of paper between the carbon back and the document carrier to avoid transfer of carbon to the carrier.)
6) Documents containing an easily separable writing material (e.g., those written with a lead pencil).
7) Transparent documents.
8) Folded or glued documents.

Document in document carrier should be inserted manually into the feeder.

4. Document release

4-1. General

When the release lever is pulled by hand in the direction of arrow, the latch is released and the upper document guide moves on its axis in the derection of the arrow. The feed rollers, the separation rubber plate, and the pinch rollers become free to make it possible to remove the document.

4-2. Cross section view

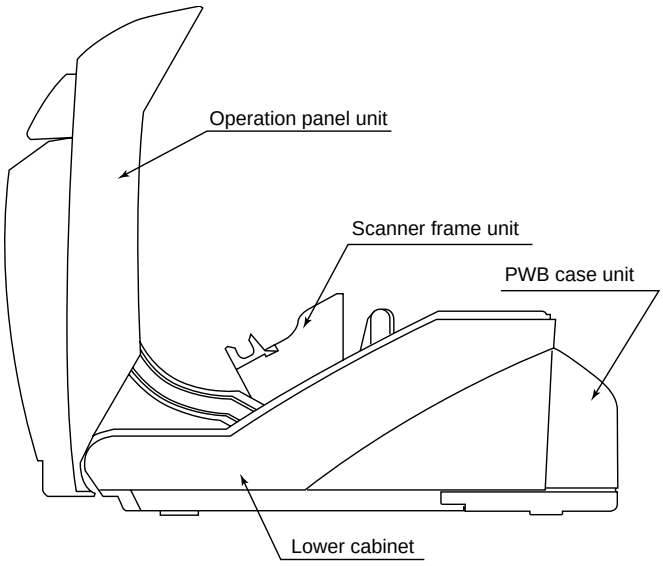


Fig. 5

5. Recording block

5-1. General view

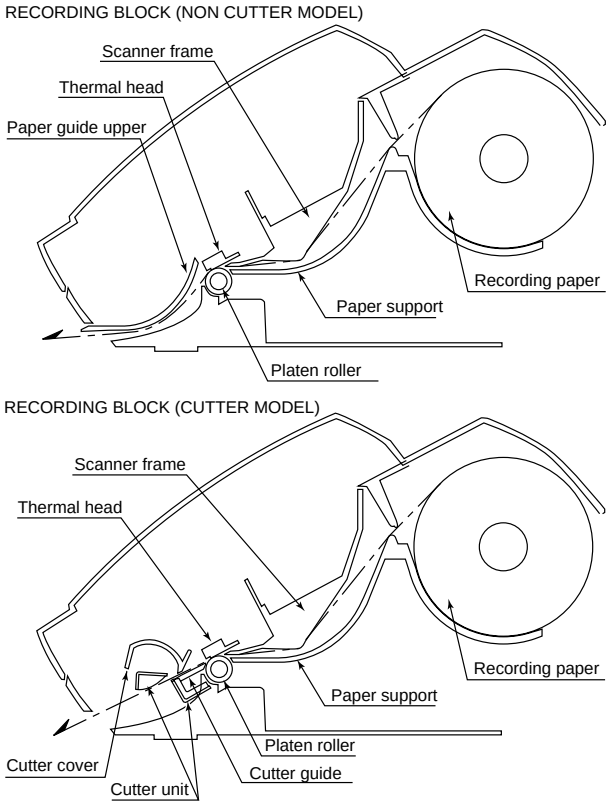


Fig. 6

5-2. Driving

Via the pulse motor gear shaft, the reduction gear, and the recording paper feed gear, rotation of the pulse motor is conveyed to the recording paper feed roller to feed the recording paper.

5-3. Recording

Use of a thermal head permits easier maintenance and low operating costs.

1) Thermal head

The thermal head consists of 1728-dot heat elements arranged in a single row and has the resolution of 8 dots/mm. The maximum recording speed is 10ms/line. The thermal head also incorporates a 1728-dot shift register latch and output control driver circuit. Low power consumption is achieved by dividing the head into nine segments.

2) Structure of the recording mechanism

Recording is accomplished by pressing the thermal head on the recording paper against the platen roller.

The main scan (horizontal) is electronically achieved, while the subscan (vertical) is achieved by moving the recording paper by the recording platen roller.

Usually, the cause for uneven print tone is caused by misalignment of the thermal head or uneven contact with the roller.

It can be checked in the following manner.

1) Check if the thermal head power and signal cables are properly routed.
2) Check that the thermal head pivot moves smoothly up and down.
3) Check that the thermal head support bracket is secured without any play.
4) Check to see that the recording platen roller has proper concentricity, in the case of a print tone variation evenly repeated down the page.
5) Replace the thermal head with a new one and check to see if the same trouble occurs.

[2] Disassembly and assembly procedures

- This chapter mainly describes the disassembly procedures. For the assembly procedures, reverse the disassembly procedures.
- Easy and simple disassembly/assembly procedures of some parts and units are omitted. For disassembly and assembly of such parts and units, refer to the Parts List.
- The numbers in the illustration, the parts list and the flowchart in a same section are common to each other.
- To assure reliability of the product, the disassembly and the assembly procedures should be performed carefully and deliberately.

1 Handset cover and paper support guide

Parts list (Fig. 1)

No.	Part name	Q'ty	No.	Part name	Q'ty
1	Mechanism unit	1	7	Guide wire sheet (Non cutter model)	1
2	Handset cover	1			
3	Hook switch lever	1	8	PO pinch roller (Cutter model)	2
4	Screw (ø3×12)	2			
5	Paper support guide unit	1	8	Paper set label (Non cutter model)	1
6	Anti curl shaft (Cutter model)	1	9	Paper sensor lever	1
6	Guide wire (Non cutter model)	1	10	Paper sensor lever spring	1
			11	Guide sheet	2
7	Anti curl spring (Cutter model)	2	12	Paper support guide	1

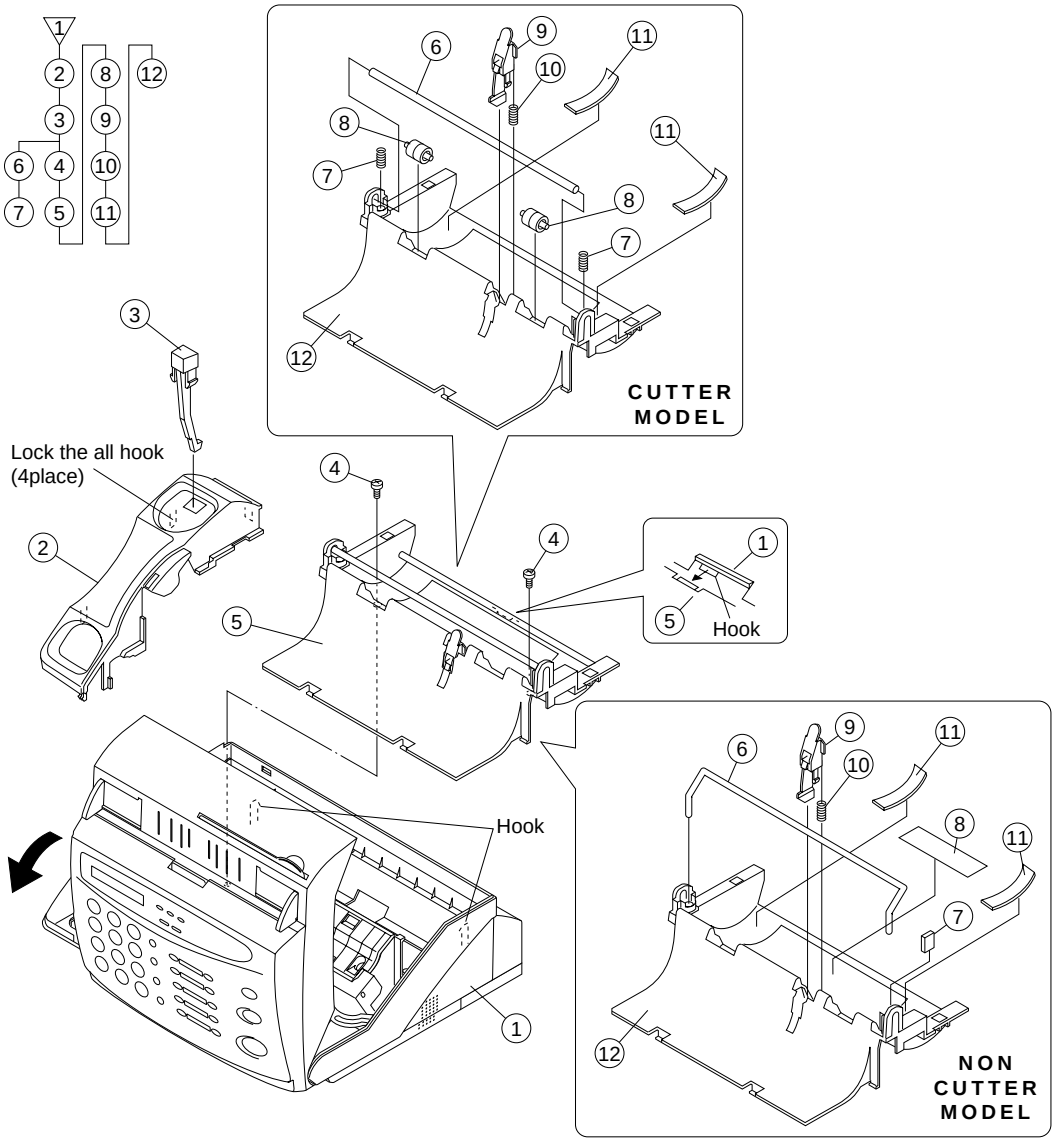


Fig. 1

2 PWB case top, bottom and PWB

Parts list (Fig. 2)

No.	Part name	Q'ty	No.	Part name	Q'ty
1	Mechanism unit	1	9	Screw (4×6)	1
2	Screw (3×6)	1	10	AC cord ass'y	1
3	Head earth cable	1	11	Screw (3×6)	1
4	Connector	3	12	TEL ARG cable	1
5	Screw (3×10)	1	13	Power supply PWB unit	1
6	PWB case unit	1	14	TEL/LIU PWB unit	1
7	Screw (3×10)	2	15	Rubber leg	2
8	PWB case, top	1	16	PWB case, bottom	1

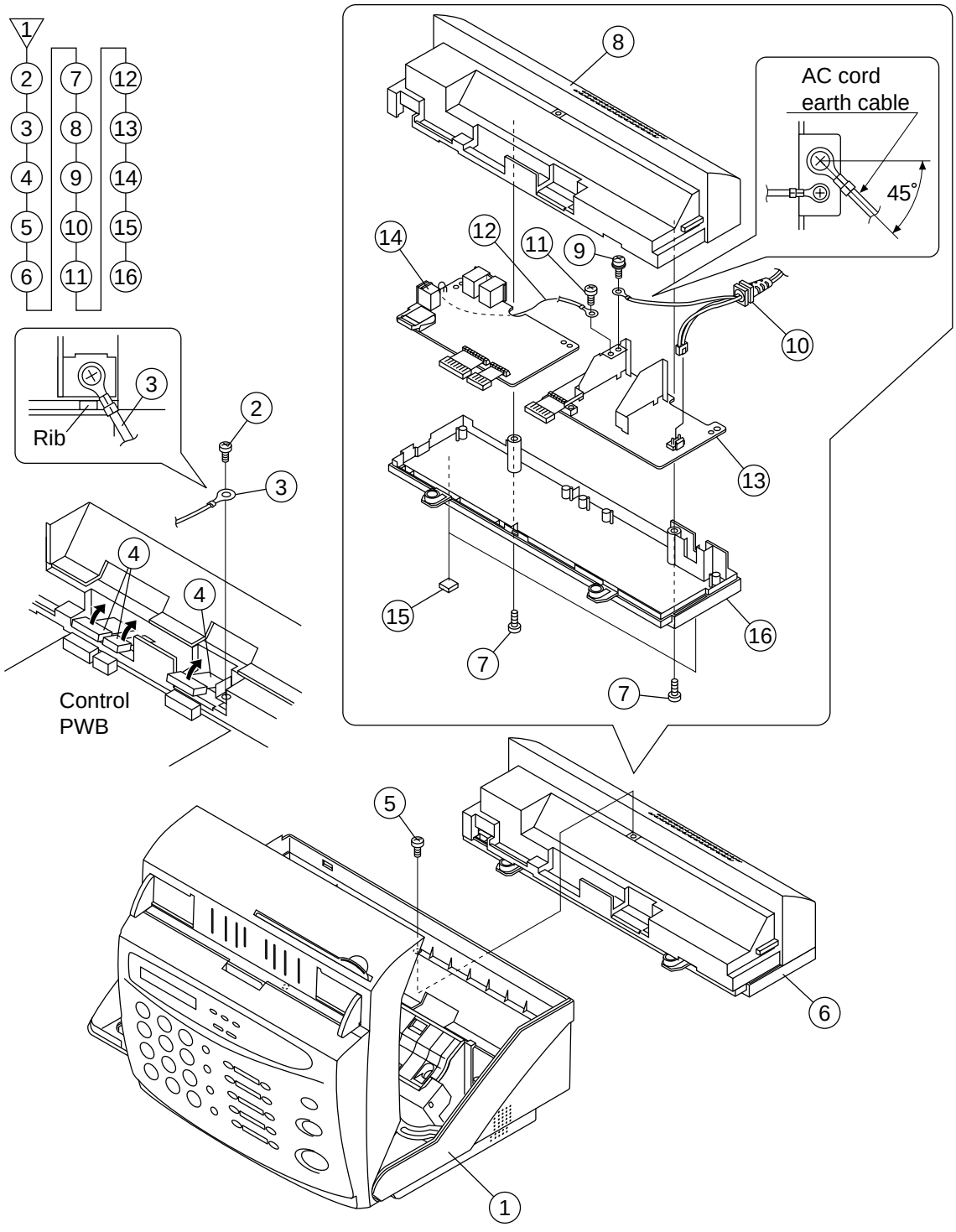


Fig. 2

3 Operation panel unit and scanner frame

Parts list (Fig. 3)

No.	Part name	Q'ty	No.	Part name	Q'ty
1	Mechanism unit	1	9	Feed roller	1
2	Screw (3×10)	2	10	CIS cable	1
3	Scanner frame unit	1	11	CIS support, right	1
4	Document guide lower	1	12	CIS unit	1
5	Reduction gear, 17/36Z	1	13	CIS support, left	1
6	Reduction gear, 17/21Z	1	14	CIS spring	2
7	Idler gear, 25Z	1	15	Scanner frame	1
8	Feed roller shaft	1	16	Panel and head cable	2
			17	Operation panel unit	1

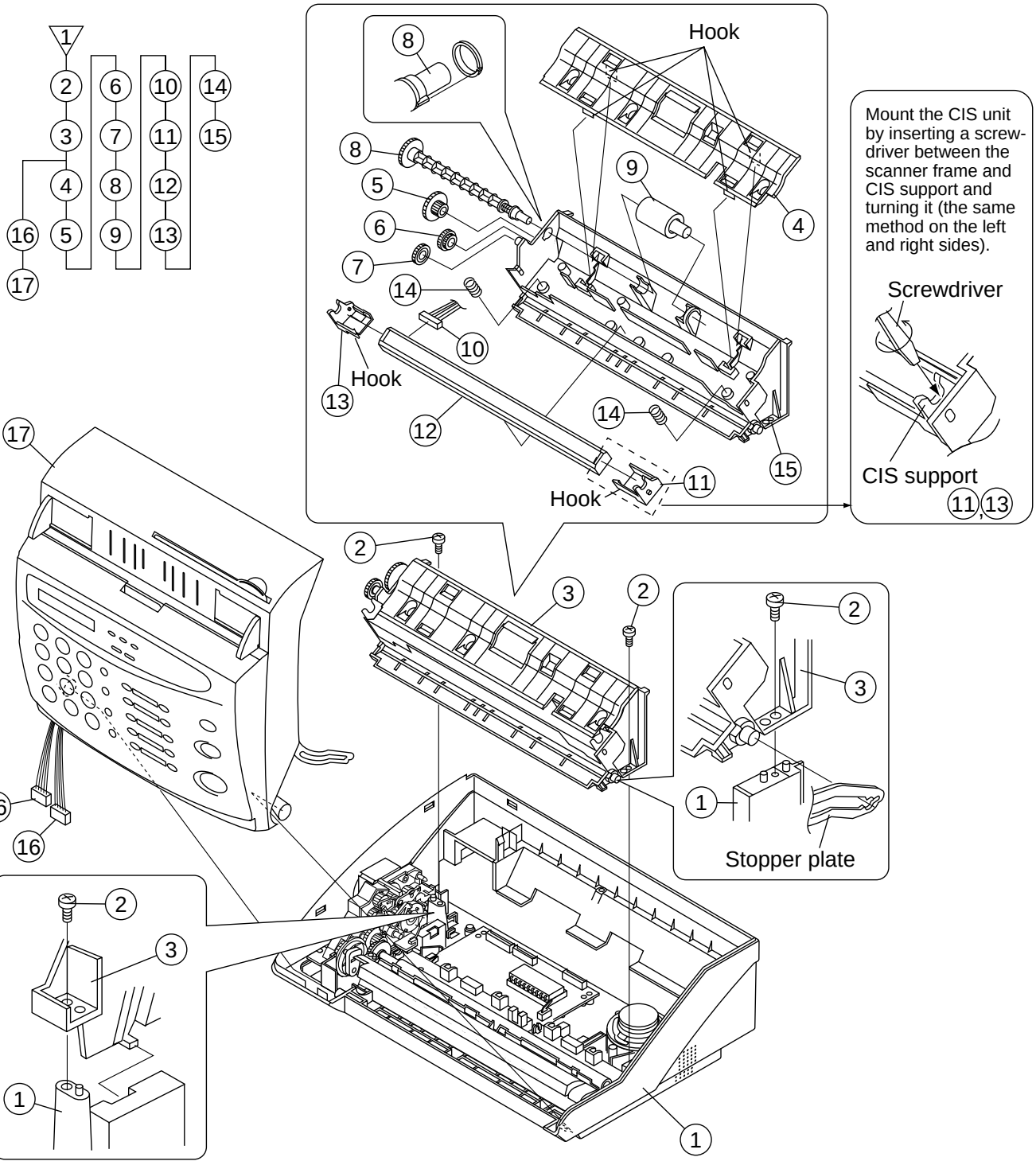

Hook
Hook
Hook
Mount the CIS unit by inserting a screwdriver between the scanner frame and CIS support and turning it (the same method on the left and right sides).
Screwdriver
CIS support
Stopper plate

Fig. 3

4 Document guide upper unit and head frame

Parts list (Fig. 4)

No.	Part name	Q'ty	No.	Part name	Q'ty
1	Operation panel unit	1	11	Head support, right	1
2	Screw (3×10)	2	12	Screw (3×6)	1
3	Support plate	1	13	Head earth cable	1
4	Document guide upper unit	1	14	Head support, left	1
			15	Thermal head	1
5	Screw (3×10)	2	16	Pinch roller shaft	1
6	Head sheet	1	17	Pinch roller	2
7	Head cable	1	18	Pinch roller pressing spring	2
8	Head spring A	2			
9	Head spring B	3	19	Head frame	1
10	Screw (3×6)	1			

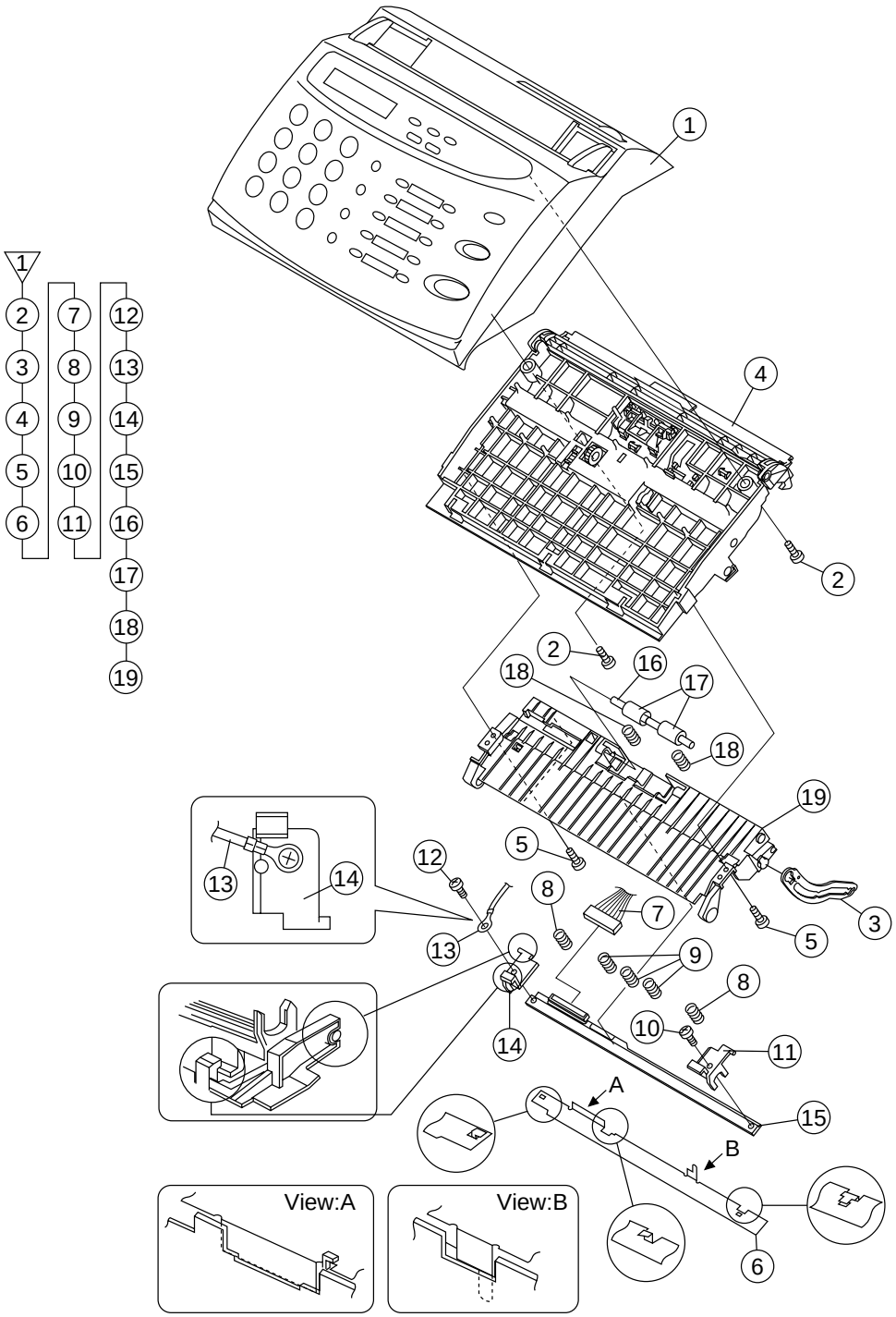


Fig. 4

5 Document guide upper

Parts list (Fig. 5)

No.	Part name	Q'ty	No.	Part name	Q'ty
1	Rear sheet	1	10	Panel lock lever	1
2	CIS gear, 29Z	1	11	Document sensor lever spring	1
3	CIS roller A ass'y	1			
4	Transfer bearing	1	12	Document sensor lever	1
5	CIS roller B ass'y	1	13	Separate spring	1
6	Transfer roller	1	14	Separator plate	1
7	Transfer bearing	1	15	Paper feed spring	1
8	Idler gear, 20Z	1	16	Separator rubber	1
9	Panel lock lever spring	1	17	Document guide upper	1

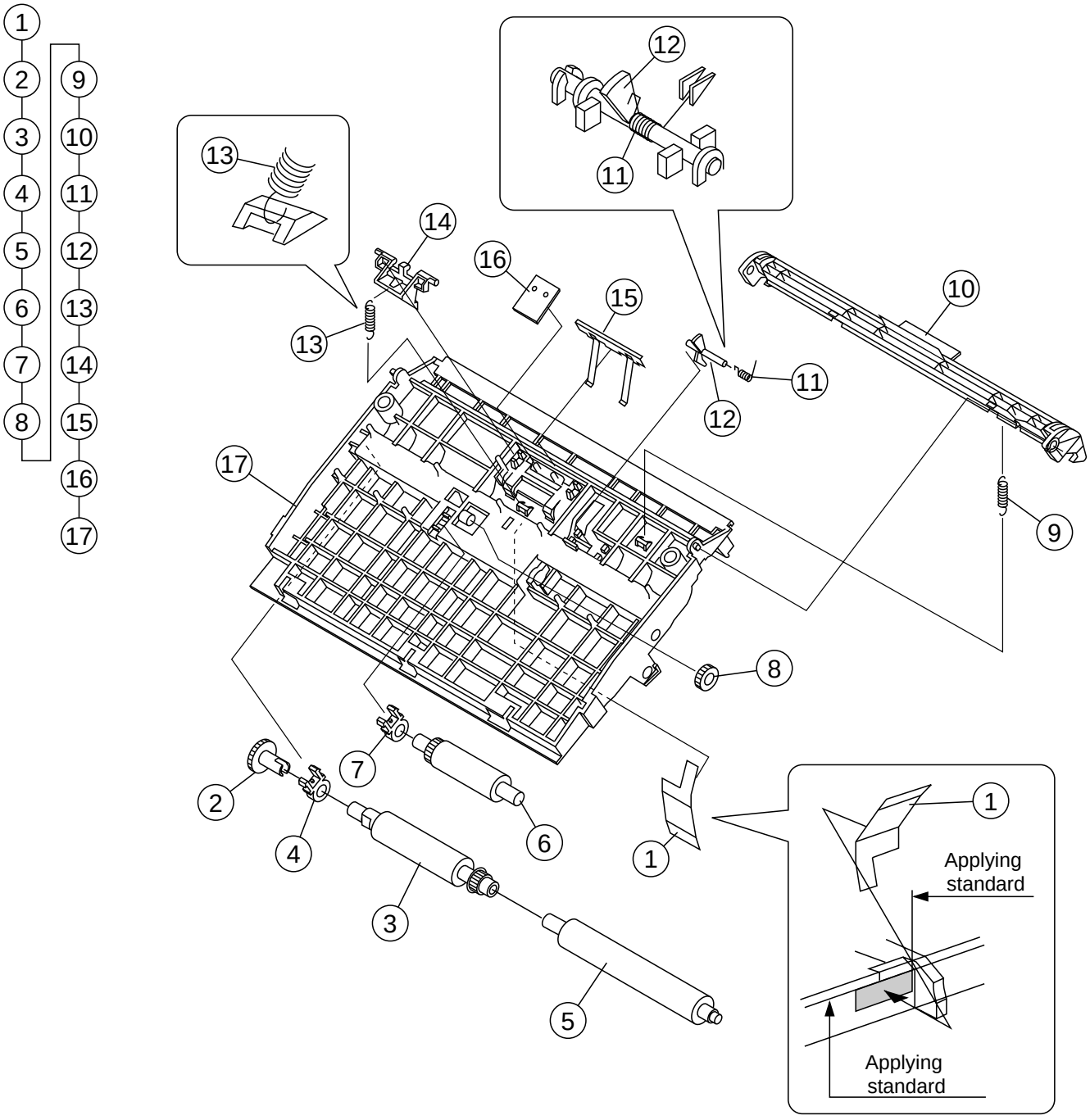


Fig. 5

6 Operation panel

Parts list (Fig. 6)

No.	Part name	Q'ty	No.	Part name	Q'ty
1	Operation panel unit	1	8	Hopper spring	1
2	Screw (2×6)	3	9	Hopper guide, right	1
3	Operation panel cable	1	10	Hopper guide, left	1
4	Operation panel PWB	1	11	Stop key	1
5	Document tray	1	12	Start key	1
6	Screw	1	13	Direct key	1
7	Pinion gear	1	14	12 key	1
			15	Operation panel	1

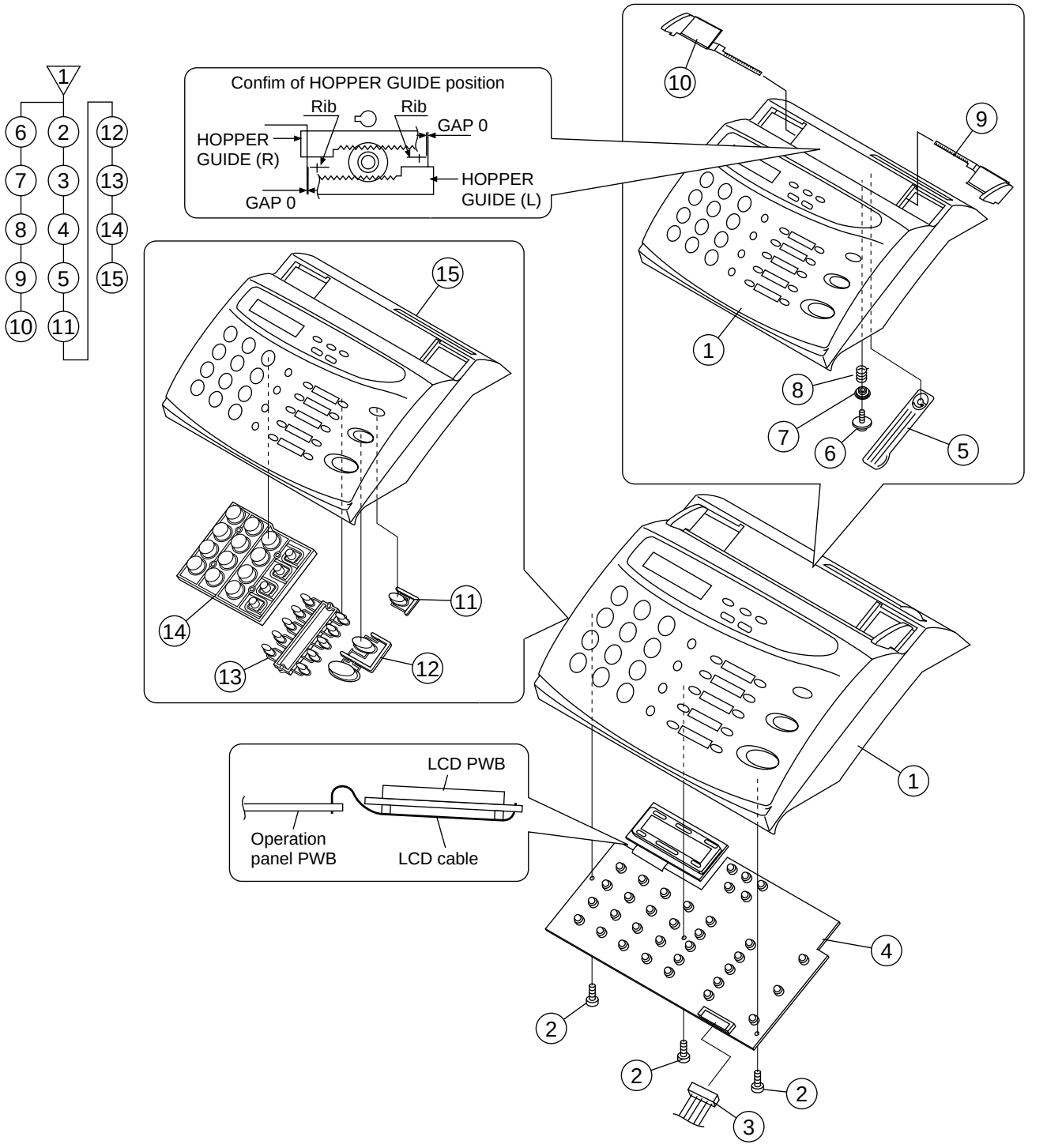


Fig. 6

7 Drive unit, PWB and cutter

Parts list (Fig. 7)

No.	Part name	Q'ty	No.	Part name	Q'ty
1	Mechanism unit	1	9	Cutter unit (Cutter model only)	1
2	Screw (3×10) (Cutter model)	2	10	Screw (3×10) (Cutter model only)	1
2	Screw (3×10) (Non cutter model)	1	11	Cutter cover (Cutter model only)	1
3	Cutter arm (Cutter model only)	1	12	Cutter guide (Cutter model only)	1
4	Drive unit	1	13	Cutter (Cutter model only)	1
5	Platen gear	1	14	Screw (3×10)	2
6	Platen roller	1	15	Speaker cable	1
7	Platen bearing	2	16	Control PWB unit	1
8	Screw (3×10) (Cutter model only)	1			

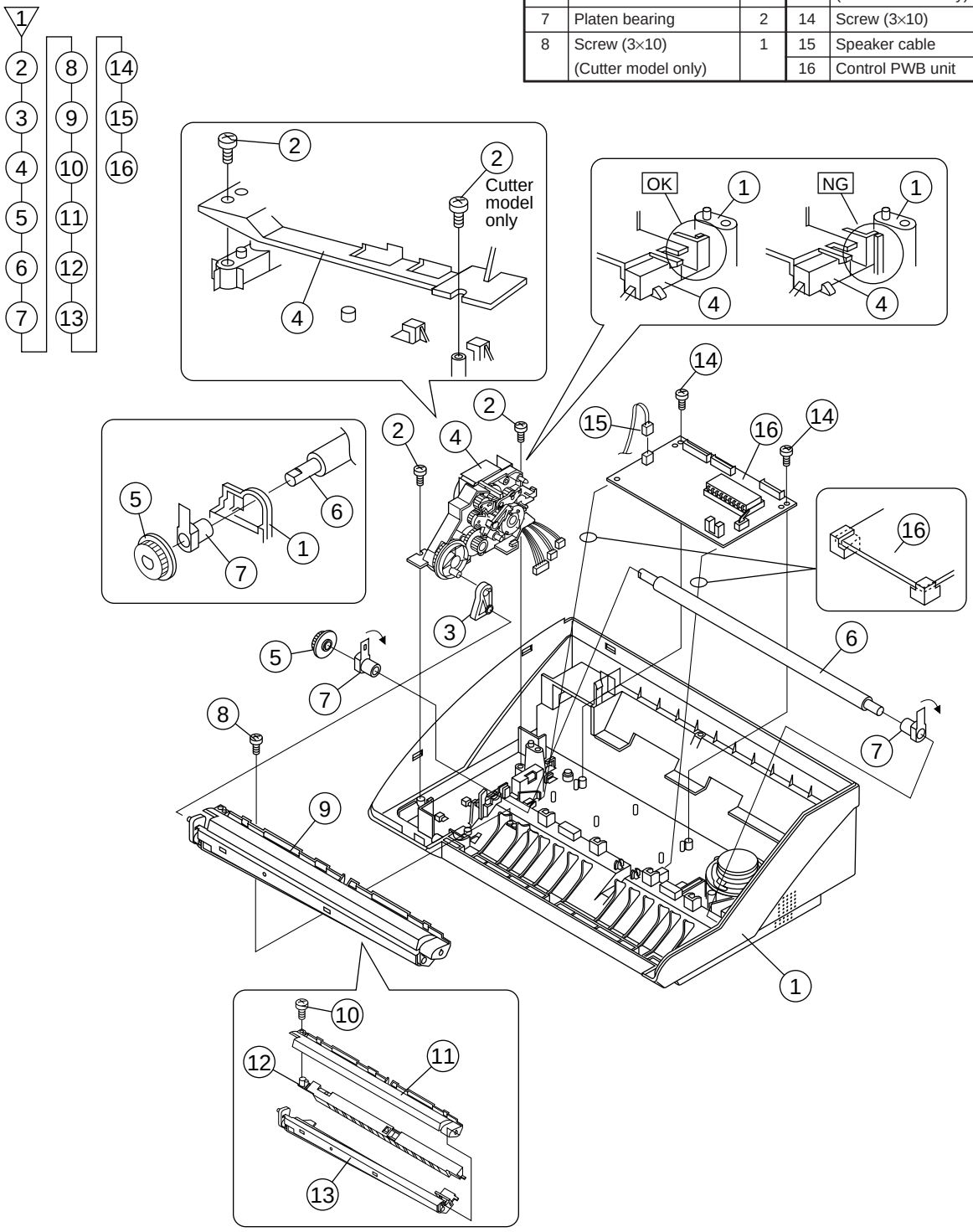


Fig. 7

8	**Speaker, paper sensor lever and paper guide upper**

Parts list (Fig. 8)

No.	Part name	Q'ty
1	Mechanism unit	1
2	Paper sensor lever spring (Cutter model only)	1
3	Paper sensor lever (Cutter model only)	1
4	Screw	2
5	Speaker spacer	1
6	Speaker	1
7	Paper guide upper (Non Cutter model only)	1

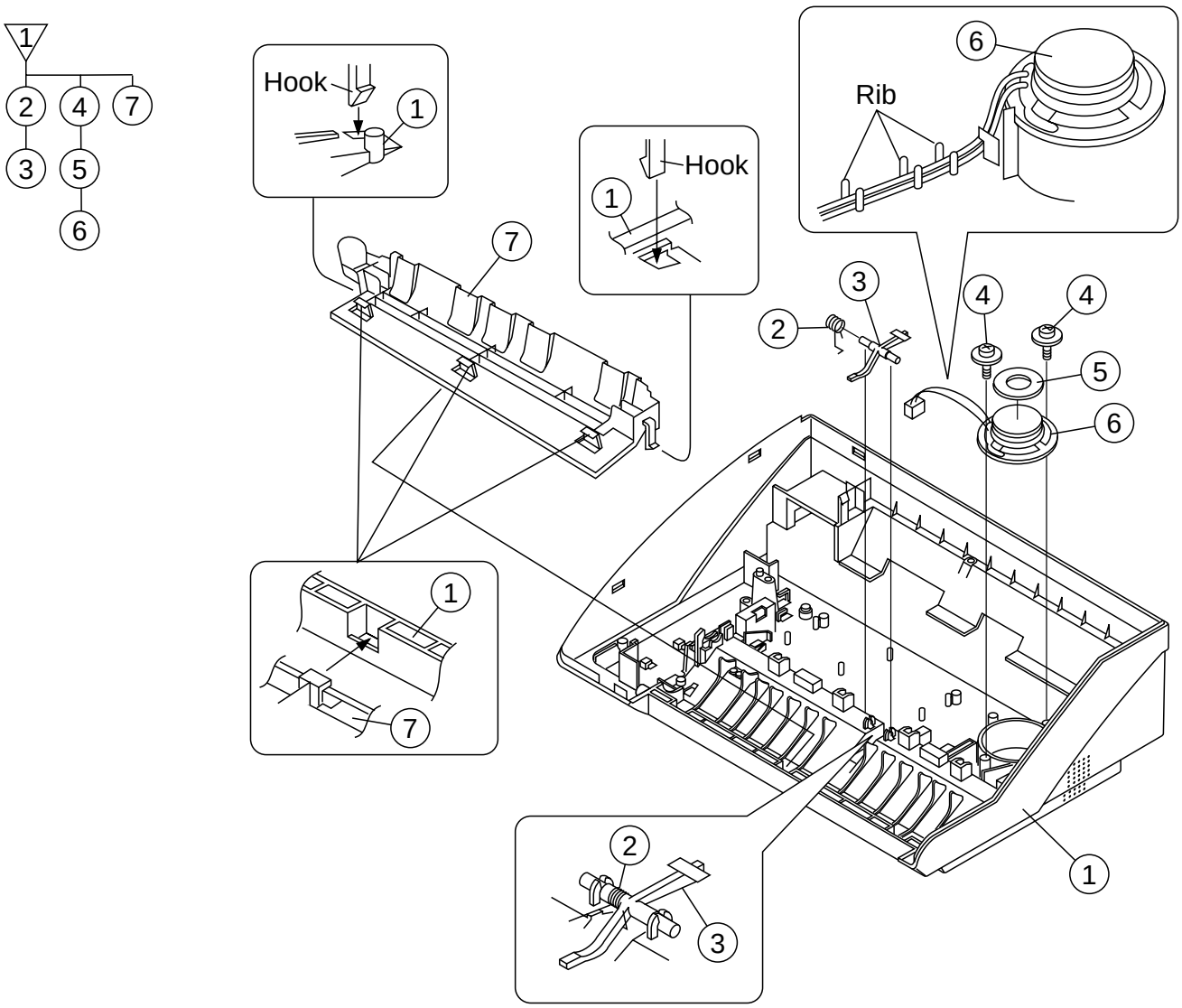


Fig. 8

9 Drive frame (Non cutter model)

Parts list (Fig. 9)

No.	Part name	Q'ty	No.	Part name	Q'ty
1	Change lever spring	1	11	Planet gear lever B	1
2	Planet gear, 17Z	1	12	Idler gear, 25Z	1
3	Change lever A	1	13	Cam switch	1
4	Cam	1	14	Reduction gear, 17Z	1
5	Reduction gear, 17/36Z	1	15	Idler gear, 25Z	1
6	Planet gear, 17Z	1	16	Screw (3×10)	1
7	Planet gear spring	1	17	Motor	1
8	Planet gear lever A	1	18	Motor heat sink	1
9	Planet gear, 17Z	1	19	Drive frame	1
10	Planet gear spring	1			

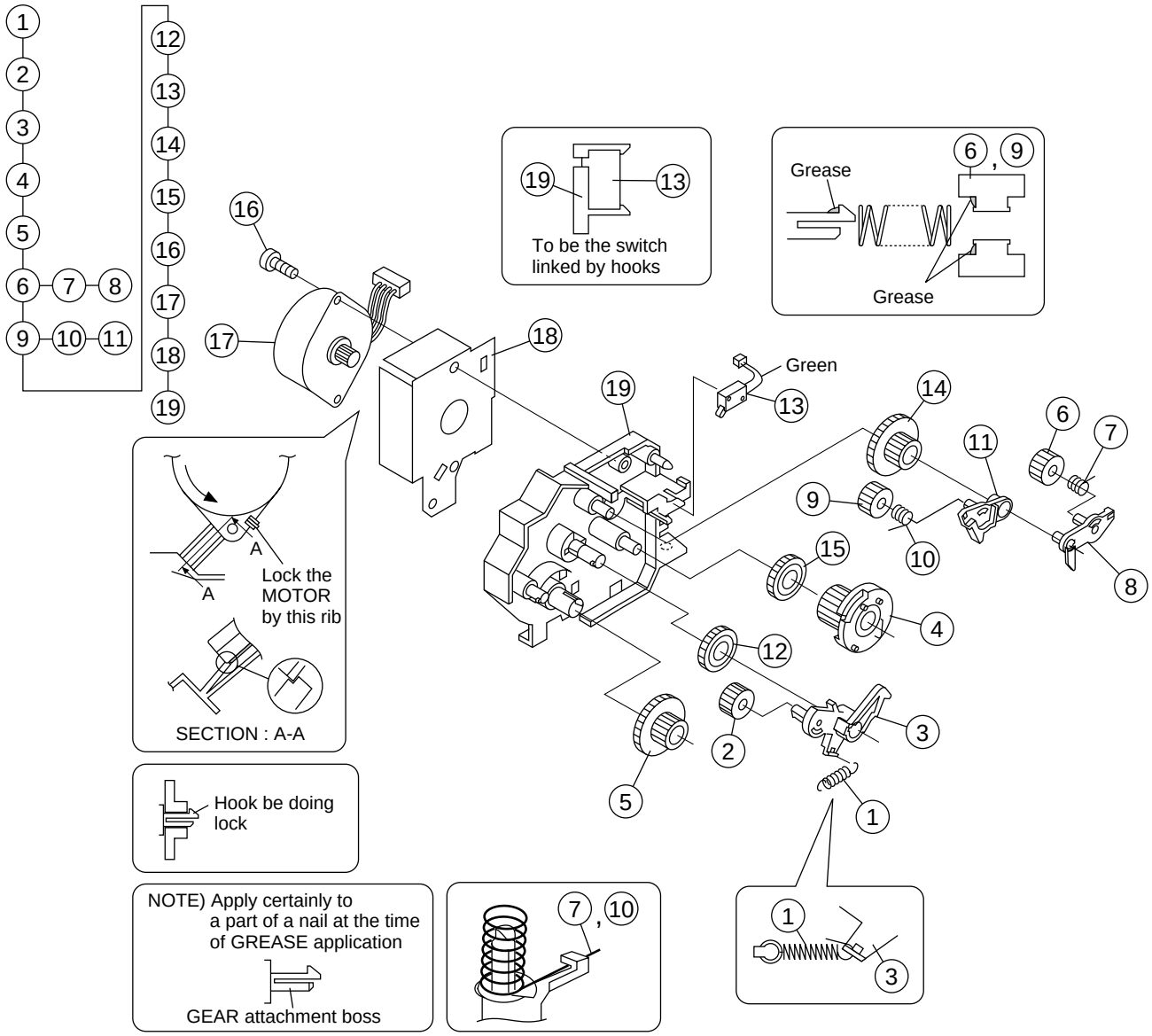

To be the switch linked by hooks
Grease
Grease
Green
Lock the MOTOR by this rib
SECTION : A-A
Hook be doing lock
NOTE) Apply certainly to a part of a nail at the time of GREASE application
GEAR attachment boss

Fig. 9

10 Drive frame (Cutter model)

Parts list (Fig. 10)

No.	Part name	Q'ty	No.	Part name	Q'ty	No.	Part name	Q'ty
1	Cutter cam switch	1	11	Planet gear, 17Z	1	21	Reduction gear, 17/36Z	1
2	Planet gear, 17Z	1	12	Planet gear spring	1	22	Idler gear, 25Z	1
3	Planet gear spring	1	13	Planet gear lever A	1	23	Idler gear, 25Z	1
4	Planet gear lever C	1	14	Planet gear, 17Z	1	24	Idler gear, 20Z	1
5	Change lever spring	1	15	Planet gear spring	1	25	Screw (3×10)	1
6	Planet gear, 17Z	1	16	Planet gear lever B	1	26	Motor	1
7	Change lever A	1	17	Idler gear, 25Z	1	27	Motor heat sink	1
8	Cam	1	18	Cam switch	1	28	Drive frame	1
9	Reduction gear, 17/36Z	1	19	Reduction gear, 17/30Z	1			
10	Cutter gear, 44Z	1	20	Reduction gear, 17/30Z	1			

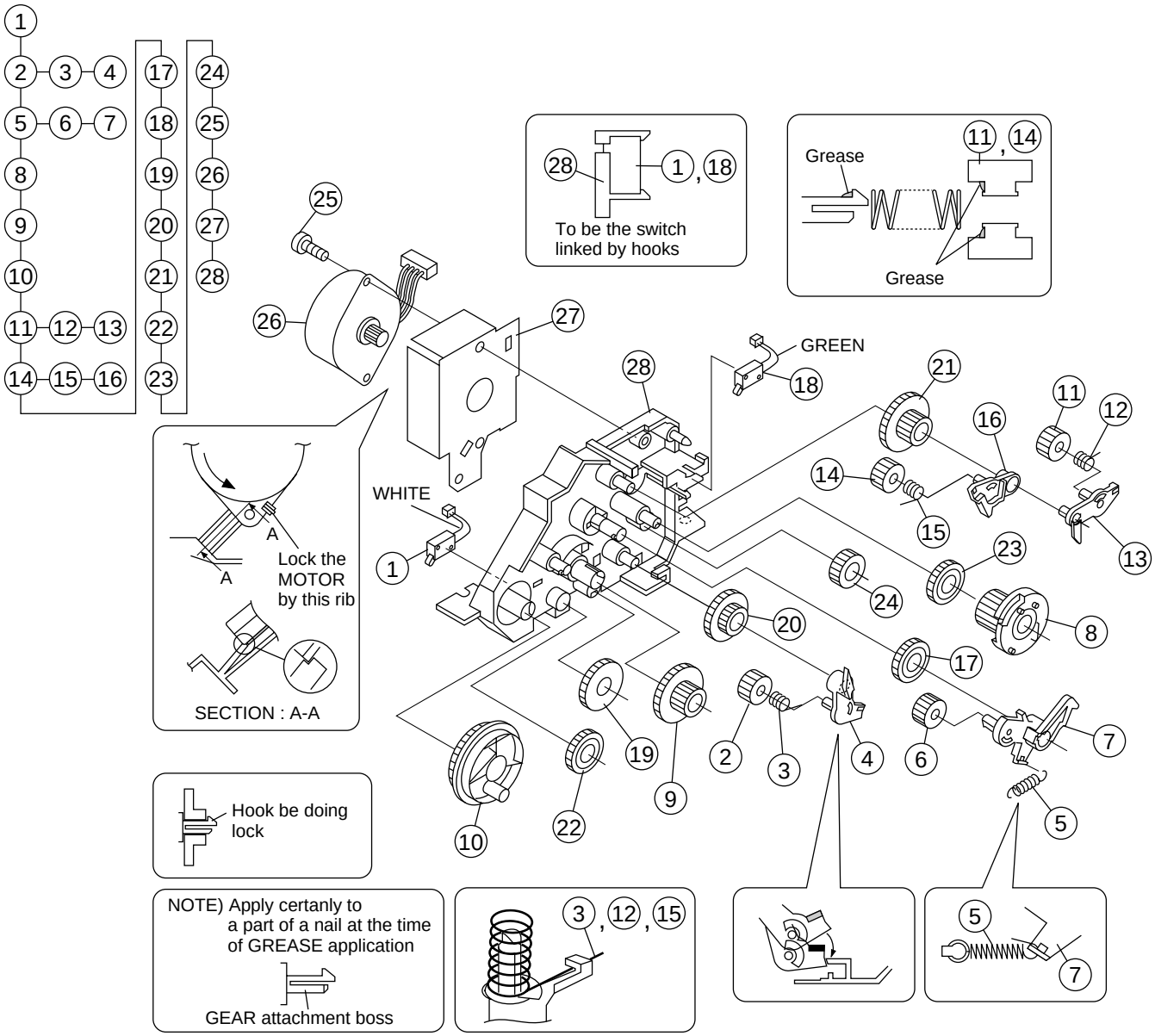


Fig. 10

11 Wire treatment

Parts list (Fig. 11)

No.	Part name	Q'ty
1	Band	5
2	Screw (3×6)	2
3	Screw (4×6)	1
4	UL tape	3
5	Core (F2064)	1
6	Core (F2063)	1
7	Band (100mm)	1

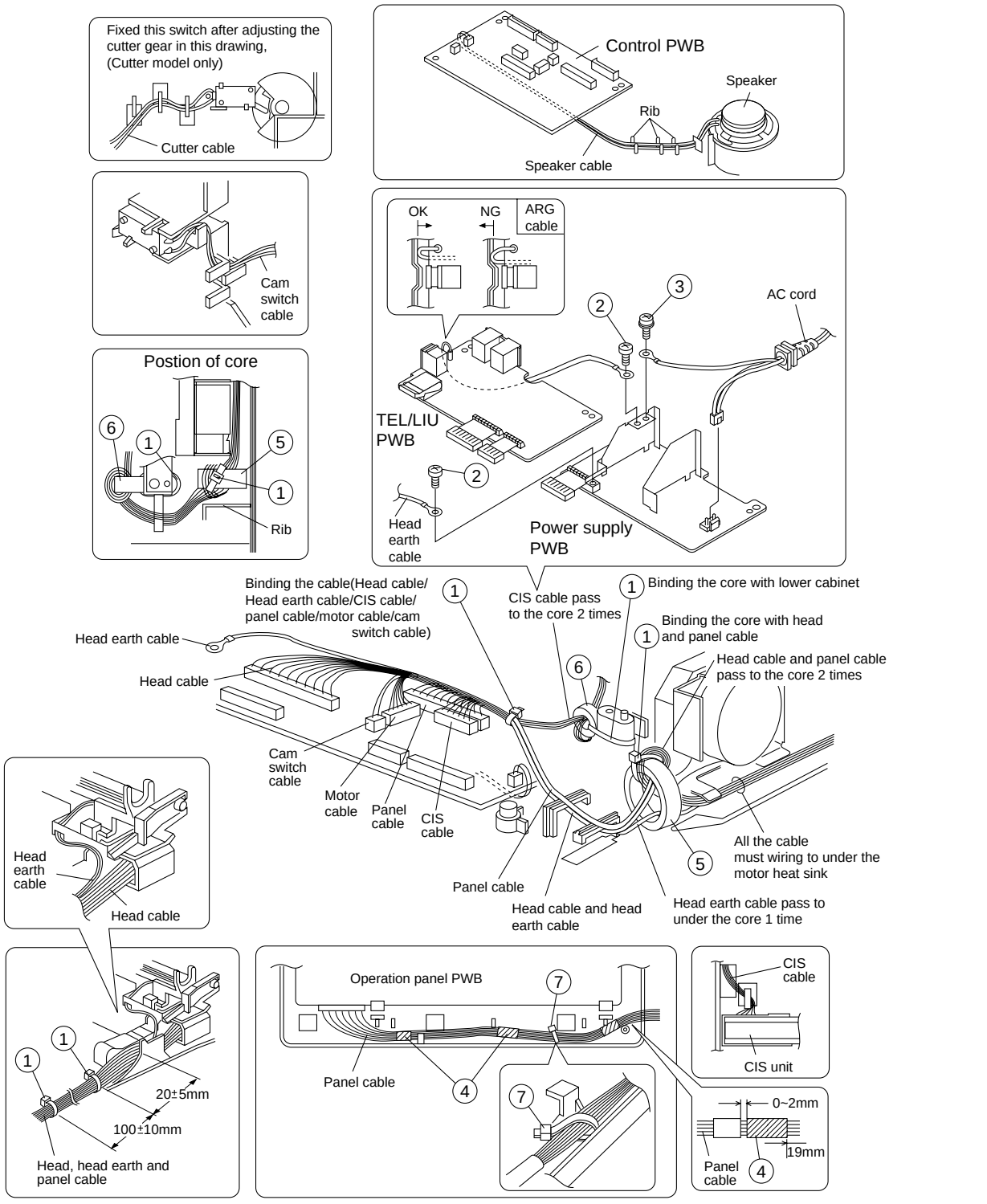
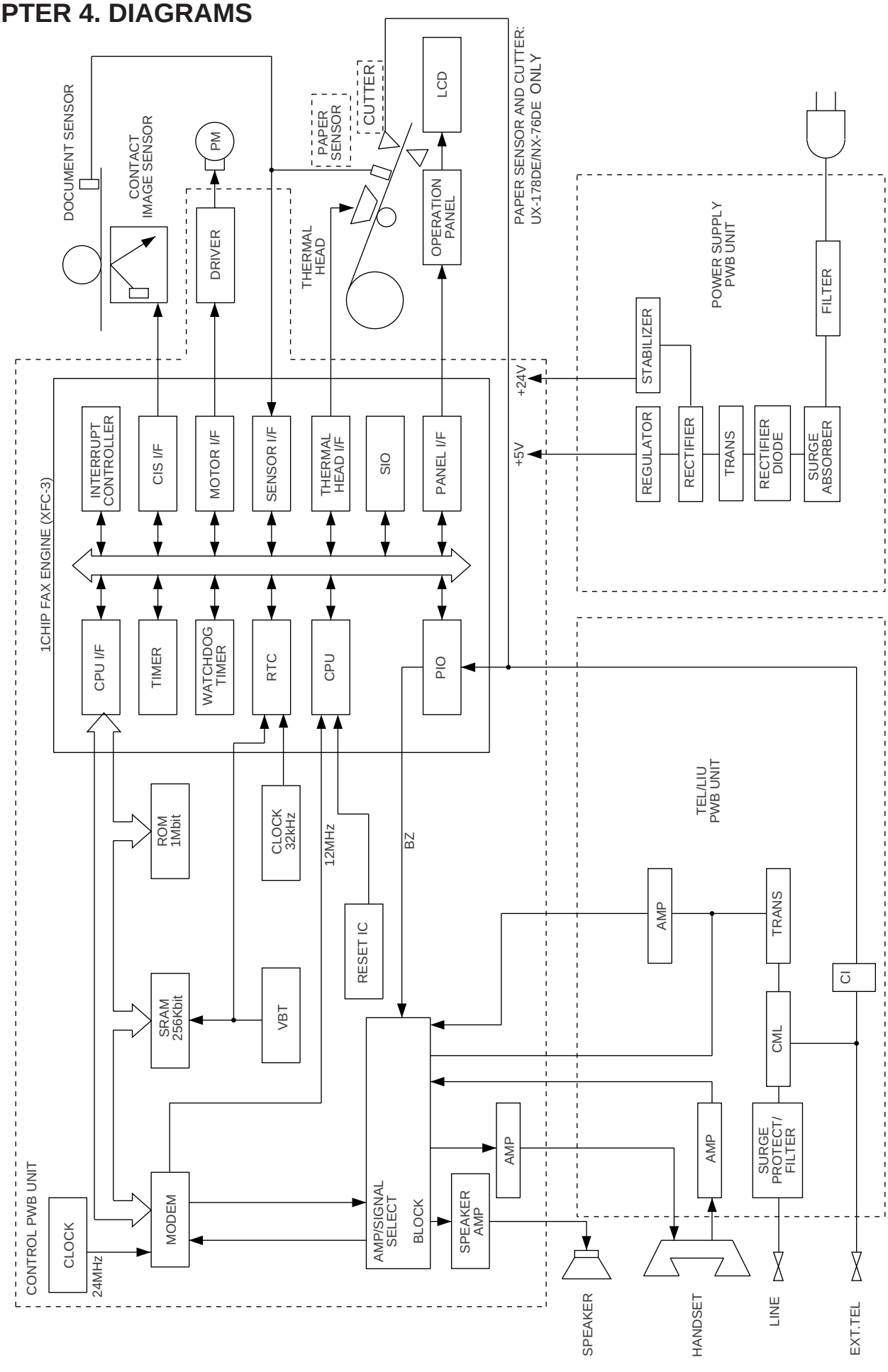


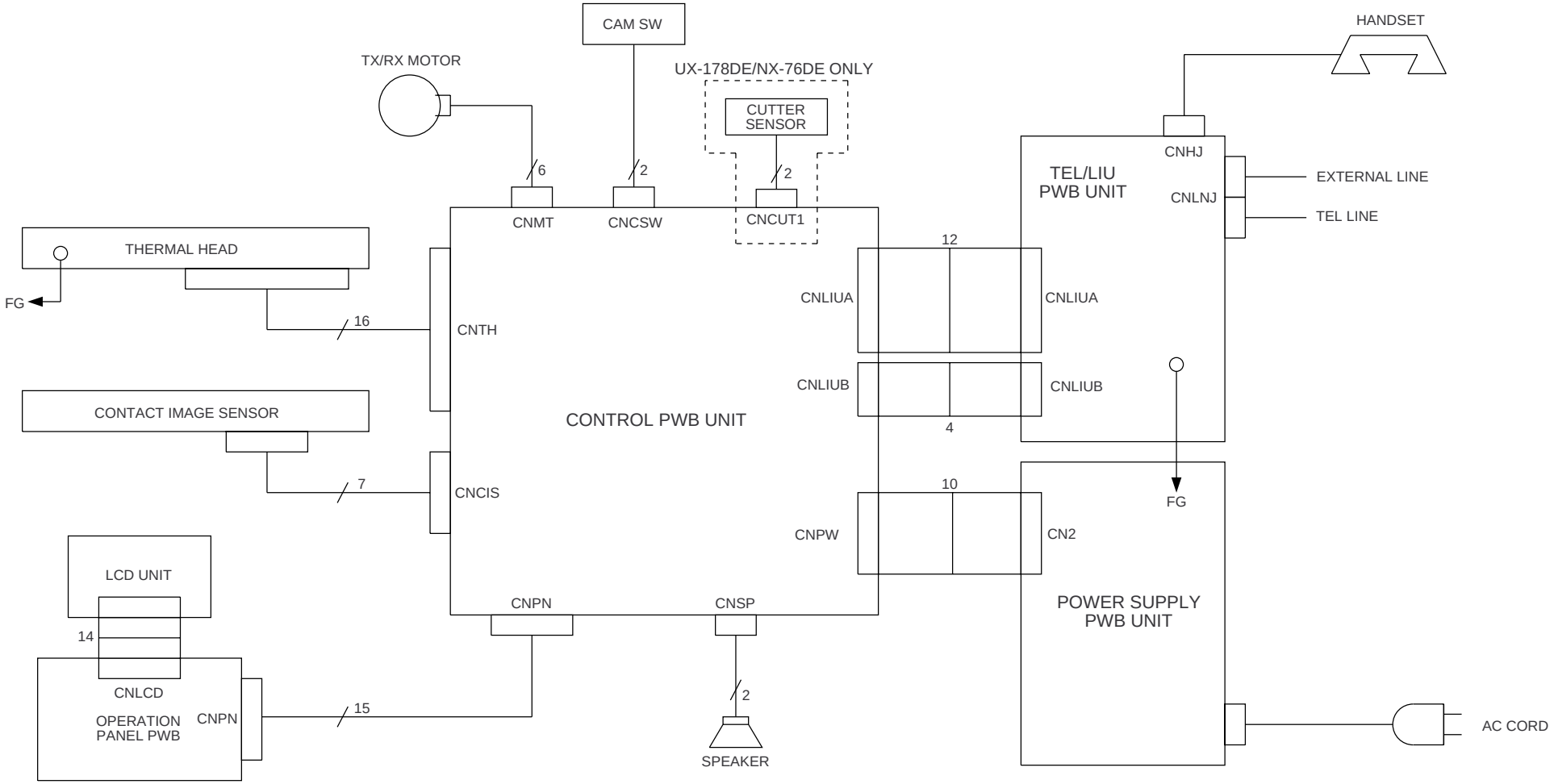
Fig. 11

CHAPTER 4. DIAGRAMS

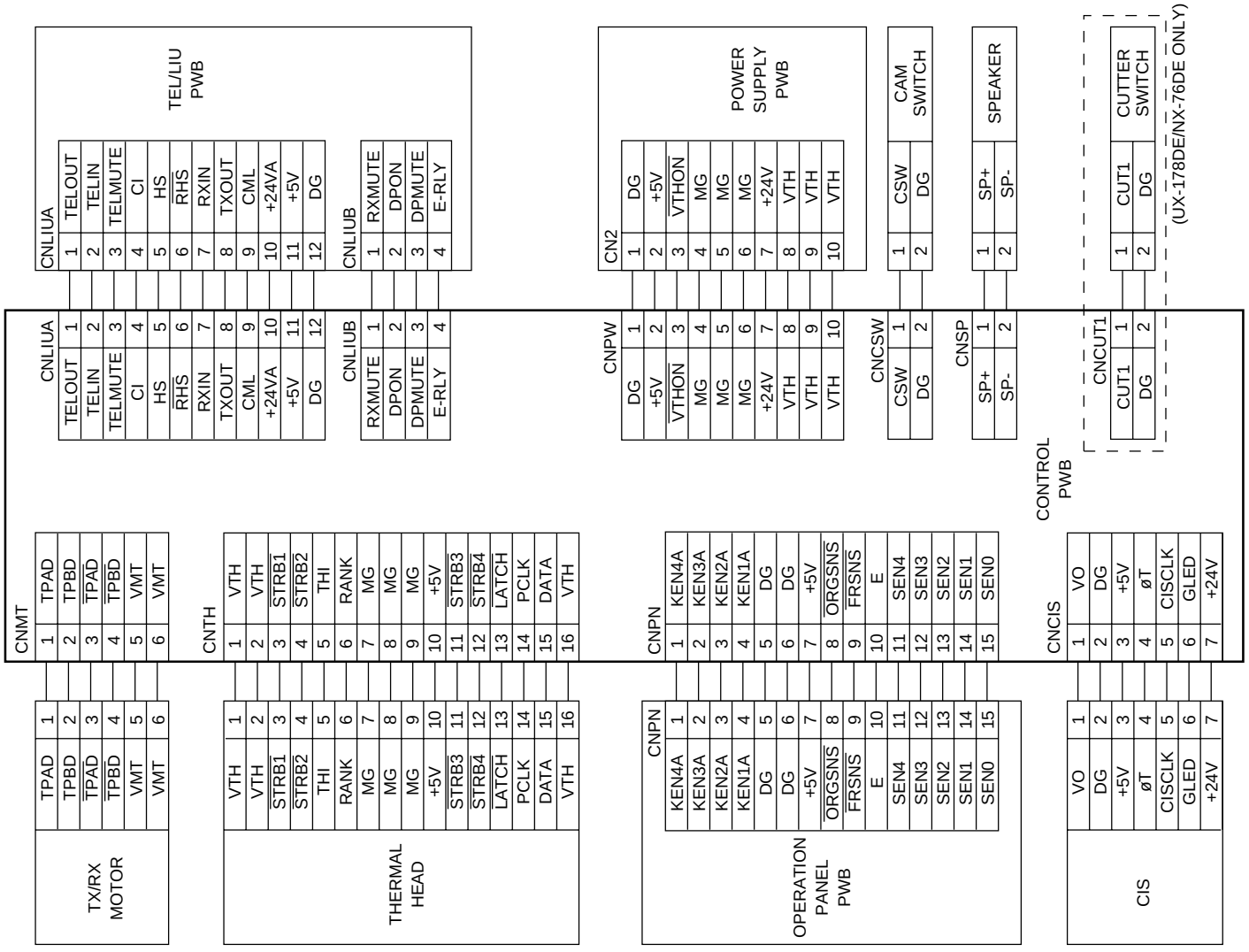
[1] Block diagram



[2] Wiring diagram



[3] Point- to-point diagram



CHAPTER 5. CIRCUIT DESCRIPTION

[1] Circuit description

1. General description

The compact design of the control PWB is obtained by using ROCKWELL fax engine in the main control section and high density printing of surface mounting parts. Each PWB is independent according to its function as shown in Fig. 1.

2. PWB configuration

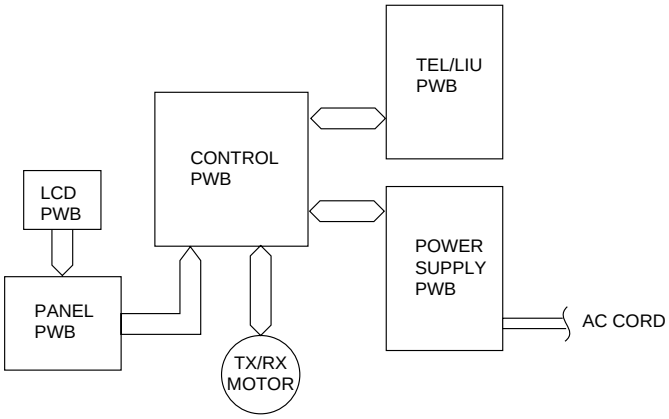


Fig. 1

1) Control PWB

The control PWB controls peripheral PWBs, mechanical parts, transmission, and performs overall control of the unit.
This machine employs a 1-chip modem (R96DFXL-CID) which is installed on the control PWB.

2) TEL/LIU PWB

This PWB controls connection of the telephone line to the unit.

3) Power supply PWB

This PWB provides voltages of +5V and +24V to the other PWBs.

4) Panel PWB

The panel PWB allows input of the operation keys.

5) LCD PWB

This PWB controls the LCD display.

3. Operational description

Operational descriptions are given below:

- Transmission operation

  When a document is loaded in standby mode, the state of the document sensor is sensed via the 1 chip fax engine (XFC3). If the sensor signal was on, the motor is started to bring the document into the standby position. With depression of the START key in the off-hook state, transmission takes place.
  Then, the procedure is sent out from the modem and the motor is rotated to move the document down to the scan line. In the scan processor, the signal scanned by the CIS is sent to the internal image processor and the AD converter to convert the analog signal into binary data. This binary data is transferred from the scan processor to the image buffer within the RAM and encoded and stored in the transmit buffer of the RAM. The data is then con-verted from parallel to serial form by the modem where the serial data is modulated and sent onto the line.

- Receive operation

  There are two ways of starting reception, manual and automatic.
  Depression of the START key in the off-hook mode in the case of manual receive mode, or CI signal detection by the LIU in the automatic receive mode.

  First, the XFC3 controls the procedure signals from the modem to be ready to receive data. When the program goes into phase C, the serial data from the modem is converted to parallel form in the modem interface of the 1 chip fax engine (XFC3) which is stored in the receive buffer of the RAM. The data in the receive buffer is decoded software-wise to reproduce it as binary image data in the image buffer. The data is DMA transferred to the recording processor within the XFC3 which is then converted from parallel to serial form to be sent to the thermal head. The data is printed line by line by the XFC3 which is assigned to control the motor rotation and strobe signal.

- Copy operation

  To make a copy on this facsimile, the COPY key is pressed when the machine is in stand-by with a document on the document table and the telephone set is in the on-hook state.

  First, depression of the COPY key advances the document to the scan line. Similar to the transmitting operation, the image signal from the CIS is converted to a binary signal in the DMA mode via the 1 chip fax engine (XFC3) which is then sent to the image buffer of the RAM. Next, the data is transferred to the recording processor in the DMA mode to send the image data to the thermal head which is printed line by line. The copying takes place as the operation is repeated.

[2] Circuit description of control PWB

1. General description

Fig. 2 shows the functional blocks of the control PWB, which is composed of 4 blocks.

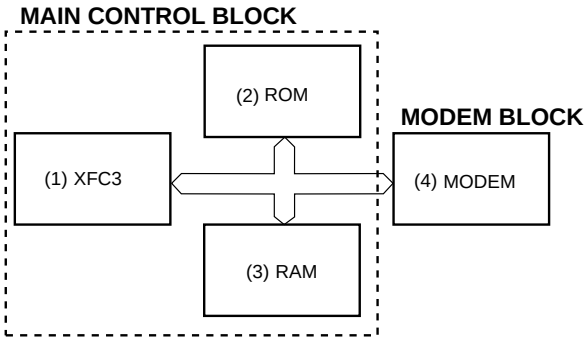


Fig. 2 Control PWB functional block diagram

2. Description of each block

(1) Main control block

The main control block is composed of ROCKWELL 1 chip fax engine (XFC3), ROM (128KByte), RAM (32KByte) and Modem (R96DFXL-CID). Devices are connected to the bus to control the whole unit.

1) XFC3 (IC2) : pin-144 QFP (XFC3)

2) R96DFXL-CID (IC4) : pin-100 QFP (MODEM)

The FAXENGINE Integrated Facsimile Controllers.

XFC3, contains an internal 8 bit microprocessor with an external 2 Mbyte address space and dedicated circuitry optimized for facsimile image processing and facsimile machine control and monitoring.

3) 27C01012 (IC7): pin-32 DIP (ROM)

EPROM of 1Mbit equipped with software for the main CPU.

3) W24257S-70LL (IC5): pin-28 SOP (RAM)

Line memory for the main CPU system RAM area and coding/decoding process. Used as the transmission buffer.

Memory of recorded data such as daily report and auto dials. When the power is turned off, this memory is backed up by the lithium battery.

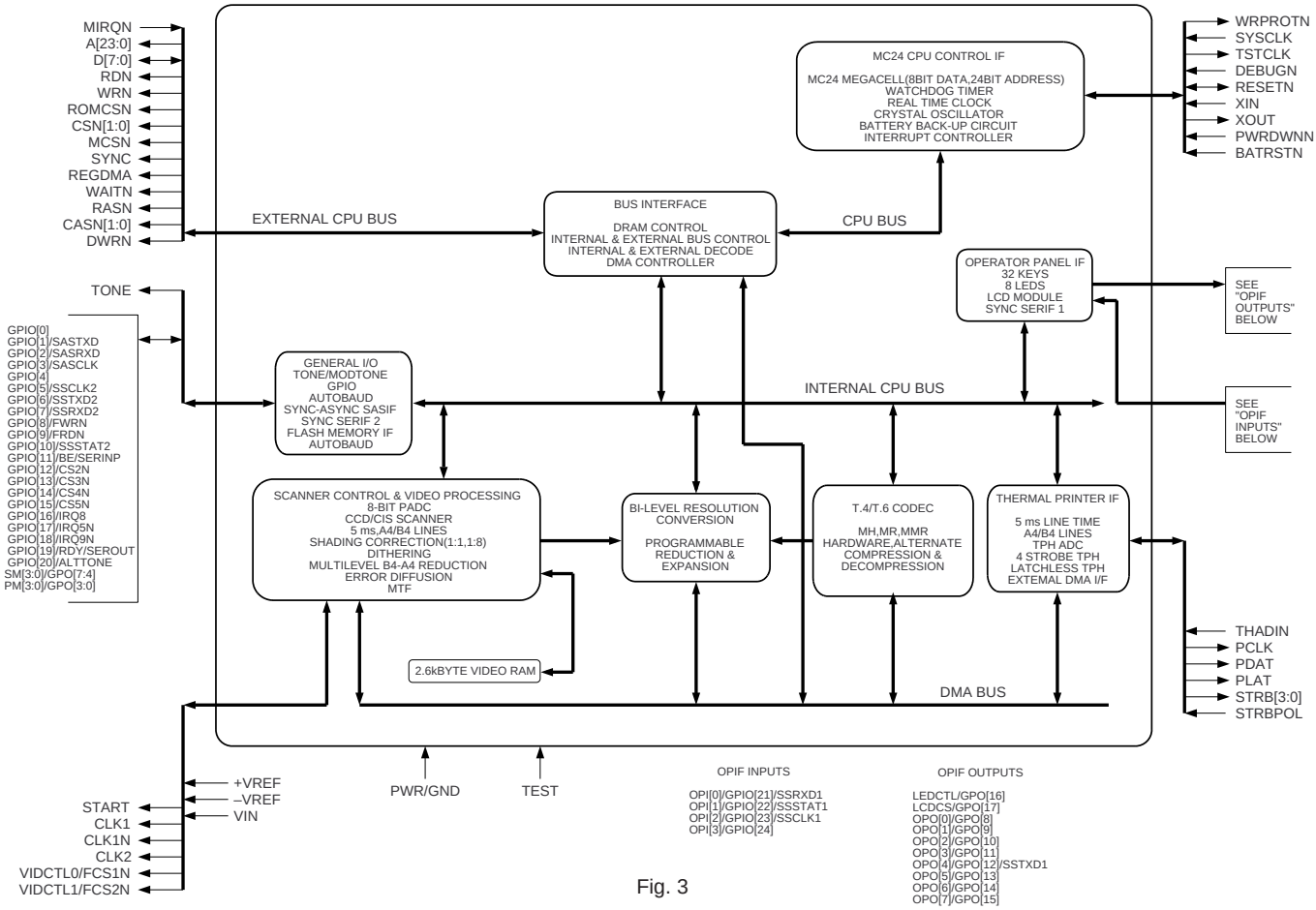


Fig. 3

XFC3 (IC2) Terminal descriptions

Pin Name	Pin No.	I/O	Input Type	Output Type	Pin Description (Note: Active low signals have an "n" pin name ending.)
CPU Control Interface					
MIRQn	135	I	HU	–	Modem interrupt, active low. (Hysteresis In, Internal Pullup.)
SYSCLK	133	I	H	–	System clock. (Hysteresis In.)
TSTCLK	130	O	–	123XT	Test clock.
Bus Control Interface					
A[23:0]	[1:6][8:13] [15:20][22:27]	O	TU	123XT	Address bus (24-bit).
D[7:0]	[136:139] [141:144]	I/O	TU	123XT	Data bus (8-bit).
RDn	128	O	–	123XT	Read strobe.
WRn	127	O	–	123XT	Write strobe.
ROMCSn	120	O	–	123XT	ROM chip select.
CS1n	122	O	–	123XT	I/O chip select.
CS0n	57	O	–	123XT	SRAM chip select. (Battery powered.)
MCSn	121	O	–	123XT	Modem chip select.
SYNC	126	O	–	123XT	Indicates CPU op code fetch cycle (active high).
REGDMA	124	O	–	123XT	Indicates REGSEL cycle and DMA cycle.
WAITn	125	O	–	123XT	Indicates current TSTCLK cycle is a wait state or a halt state.
RASn	113	O	–	123XT	DRAM row address select. (Battery powered.)
CAS[1:0]n	[111:112]	O	–	123XT	DRAM column address select. (Battery powered.)
DWRn	109	O	–	123XT	DRAM write. (Battery powered.)
Prime Power Reset Logic and Test					
DEBUGn	129	I	HU	–	External non-maskable input (NMI).
RESETn	131	I/O	HU	2XO	XFC3 Reset.
TEST	58	I	C	–	Sets Test mode (Battery powered).
Battery Power Control and Reset Logic					
XIN	59	I	OSC	–	Crystal oscillator input pin.
XOUT	60	O	–	OSC	Crystal oscillator output pin.
PWRDWNn	62	I	H	–	Used by external system to indicate loss of power to XFC3. (Results in NMI)
BATRSTn	61	I	H	–	Battery power reset input.
WRPROTn	110	O	–	1XC	(Battery powered.) Write protect during loss of VDD power.
Scanner Interface					
START	101	O	–	2XS	Scanner shift gate control.
CLK1	100	O	–	2XS	Scanner clock.
CLK1n	99	O	–	2XS	Scanner clock-inverted.
CLK2	98	O	–	2XS	Scanner reset gate control (or clock for CIS scanner).
FCS1n/VIDCTL0	96	O	–	2XT	Flash memory chip select or Video Control signal.
FCS2n/VIDCTL1	97	O	–	2XT	Flash memory chip select or Video Control signal.
Printer Interface					
PCLK	29	O	–	3XC	Thermal Print Head (TPH) clock, or external DMAACK.
PDAT	30	O	–	2XP	Serial printing data (to TPH).
PLAT	31	O	–	3XP	TPH data latch.
STRB[3:0]	[33:36]	O	–	1XP	Strobe signals for the TPH.
STRBPOL	37	I	C	–	Sets strobe polarity, active high/low.
Operator Panel Interface					
OPO[0]/GPO[8]/ SMPWRCTRL	47	O	–	2XL	Keyboard/LED strobe [0] or GPO[8] or Scan Motor Power Control
OPO[1]/GPO[9]/ PMPWRCTRL	46	O	–	2XL	Keyboard/LED strobe [1] or GPO[9] or Print Motor Power Control
OPO[2]/GPO[10]/ RINGER	44	O	–	2XCT	Keyboard/LED strobe [2] or GPO[10] or RINGER
OPO[3]/GPO[11]	43	O	–	2XL	Keyboard/LED strobe [3] or GPO[11]
OPO[4]/GPO[12]/ SSTXD1	42	O	–	2XL	Keyboard/LED strobe [4] or GPO[12] or SSTXD1 (for SSIF1)
OPO[5]/GPO[13]	40	O	–	2XL	Keyboard/LED strobe [5] or GPO[13]
OPO[6]/GPO[14]	39	O	–	2XL	Keyboard/LED strobe [6] or GPO[14]
OPO[7]/GPO[15]	38	O	–	2XL	Keyboard/LED strobe [7] or GPO[15]
OPI[0]/GPIO[21]/ SSRXD1	52	I/O	HU	2XC	(Pullup, Hysteresis In) Keyboard return [0] or GPIO[21] or SSRXD1 (for SSIF1)
OPI[1]/GPIO[22]/ SSSTAT1	51	I/O	HU	2XC	(Pullup, Hysteresis In) Keyboard return [1] or GPIO[22] or SSSTAT1 (for SSIF1)
OPI[2]/GPIO[23]/ SSCLK1	50	I/O	HU	2XC	(Pullup, Hysteresis In) Keyboard return [2] or GPIO[23] or SSCLK1 (for SSIF1)

XFC3 (IC2) Terminal descriptions

Pin Name	Pin No.	I/O	Input Type	Output Type	Pin Description
Operator Panel Interface					
OPI[3]/GPIO[24]	49	I/O	HU	2XC	(Pullup, Hysteresis In) Keyboard return [3] or GPIO[24]
LEDCTL	55	O	–	4XC	Indicates outputs OPO[7:0] are for LEDs.
LCDCS	54	O	–	1XC	LCD chip select.
General Purpose I/O					
GPIO[0]	94	I/O	H	2XC	(Hysteresis In) GPIO[0].
GPIO[1]/SASTXD	93	I/O	H	2XC	(Hysteresis In) GPIO[1] or SASTXD (for SERIF).
GPIO[2]/SASRXD	92	I/O	H	2XC	(Hysteresis In) GPIO[2] or SASRXD (for SERIF).
GPIO[3]/SASCLK	91	I/O	H	2XC	(Hysteresis In) GPIO[3] or SASCLK (for SERIF).
GPIO[4]/CPCIN	90	I/O	H	2XC	(Hysteresis In) GPIO[4] or Calling Party Control Input.
GPIO[5]/SSCLK2	89	I/O	H	2XC	(Hysteresis In) GPIO[5] or SSCLK2 (for SSIF2).
GPIO[6]/SSTXD2	87	I/O	H	2XC	(Hysteresis In) GPIO[6] or SSTXD2 (for SSIF2).
GPIO[7]/SSRXD2	86	I/O	H	2XC	(Hysteresis In) GPIO[7] or SSRXD2 (for SSIF2).
GPIO[8]/FWRn	85	I/O	H	2XC	(Hysteresis In) GPIO[8] or flash write enable signal for NAND-type flash memory.
GPIO[9]/FRDn	84	I/O	H	2XC	(Hysteresis In) GPIO[9] or flash read enable signal for NAND-type flash memory.
GPIO[10]/SSSTAT2	83	I/O	H	2XC	(Hysteresis In) GPIO[10] or SSSTAT2 (for SSIF2).
GPIO[11]/BE/ SERINP	82	I/O	H	1XC	(Hysteresis In) GPIO[11] or bus enable or serial port data input for autobaud detection.
GPIO[12]/CS[2]n	80	I/O	H	2XC	(Hysteresis In) GPIO[12] or I/O chip select [2].
GPIO[13]/CS[3]n	79	I/O	H	2XC	(Hysteresis In) GPIO[13] or I/O chip select [3].
GPIO[14]/CS[4]n	78	I/O	H	2XC	(Hysteresis In) GPIO[14] or I/O chip select [4].
GPIO[15]/CS[5]n	77	I/O	H	2XC	(Hysteresis In) GPIO[15] or I/O chip select [5].
GPIO[16]/IRQ[8]	76	I/O	H	1XC	(Hysteresis In) GPIO[16] or external interrupt 8.
GPIO[17]/IRQ[5]n	75	I/O	H	1XC	(Hysteresis In) GPIO[17] or external interrupt 5.
GPIO[18]/IRQ[9]n	74	I/O	H	1XC	(Hysteresis In) GPIO[18] or external interrupt 9.
GPIO[19]/RDY/ SEROUT	73	I/O	H	1XC	(Hysteresis In) GPIO[19] or ready signal or Serial port data output for autobaud detection.
GPIO[20]/ALTTONE	107	I/O	H	1XC	(Hysteresis In) GPIO[20] or ALTTONE.
Miscellaneous					
SM[3:0]/GPO[7:4]	[103:106]	O	–	1XC	Programmable: scan motor control pins or GPO pins.
PM[3:0]/GPO[3:0]	[115:118]	O	–	1XC	Programmable: print motor control pins or GPO pins.
TONE	119	O	–	1XC	Tone output signal.
Power, Reference Voltages, Ground					
-Vref/CLREF	66	I	-VR	–	Negative Reference Voltage for Video A/D or Reference Voltage for the Clamp Circuit.
ADXG	68	I	VXG	–	A/D Internal GND. (NOTE: This pin requires an external 0.22μF decoupling capacitor to ADGA.)
ADGA	69		VADG		A/D Analog Ground
ADVA	70		VADV		A/D Analog Power
ADGD	72		VADG		A/D Digital Ground
+Vref	71	I	+VR		Positive Reference Voltage for Video A/D.
VIN	67	I	VA	–	Analog Video A/D input.
THADI	65	I	TA	–	Analog Thermal A/D input.
Power and Ground					
VSS(12)	7,21,28,45, 53,56,64,88, 95,108,132, 134				Digital Ground
VDD(8)	14,32,41,48, 81,102,123, 140				Digital Power
VBAT	63				Battery Power
VDRAM	114				DRAM Battery Power

(2) Panel control block

The following controls are performed by the XFC3.

- Operation panel key scanning
- Operation panel LCD display

(3) Mechanism/recording control block

- Recording control block diagram (1)

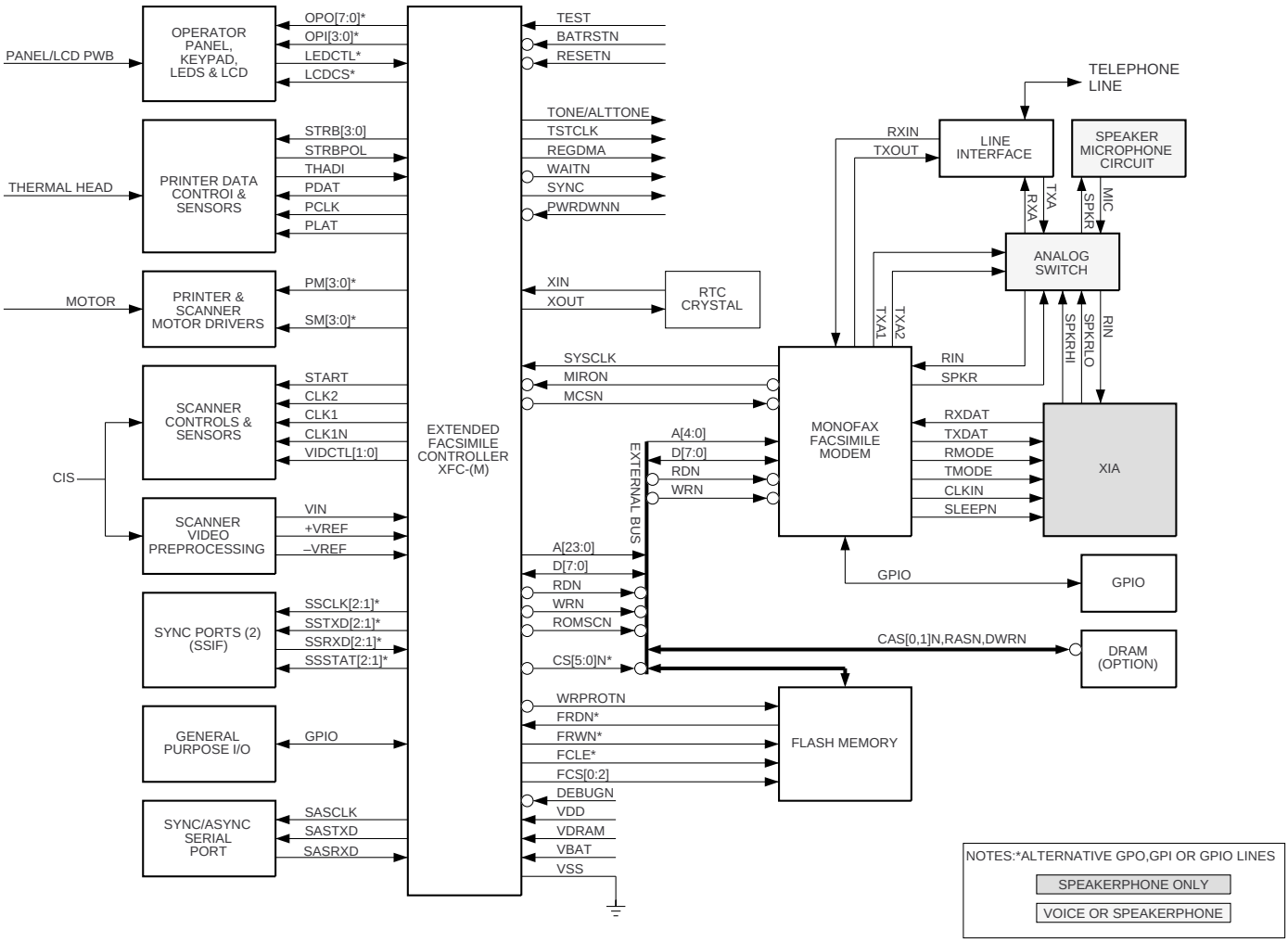


Fig. 4

(4) Modem (R96DFXL-CID) block

INTRODUCTION

The Rockwell R96DFXL-CID MONOFAX modem is a synchronous 9600 bits per second (bps) half-duplex modem with error detection and DTMF reception. It has low power consumption and requires only a single +5V DC power supply. The modem is housed in a single VLSI device package.
The modem can operate over the public switched telephone network (PSTN) through line terminations provided by a data access arrangement (DAA).
The R96DFXL-CID is designed for use in Group 3 facsimile ma-chines. The modem satisfies the requirements specified in CCITT recommendations V.29, V.27 ter, V.21 Channel 2 and T.4, and meets the binary signaling requirements of T.30.
The modem can operate at 9600, 7200, 4800, 2400, or 300 bps, and also includes the V.27 ter short training sequence option.
The modem can also perform HDLC framing according to T.30 at 9600, 7200, 4800, 2400, or 300 bps.
The modem features a programmable DTMF receiver and three programmable tone detectors which operate concurrently with the V.21 channel 2 receiver.
The voice mode allows the host computer to efficiently transmit and receive audio signals and messages.
The modem is available in either a 100-pin plastic quad flat pack (PQFP) or a 64-pin quad in-line package (QUIP).
General purpose input/output (GPIO) pins are available for host as signment in the 100-pin PQFP.
The modem's small size, single voltage supply, and low power consumption allow the design of compact system enclosures for use in both office and home environments.
MONOFAX is a registered trademark of Rockwell International.

FEATURES

- Group 3 facsimile transmission/reception
  - – ITU-TS V.29, V.27 ter, T.30, V.21 Channel 2, T.4
  - – HDLC Framing at all speeds
- V.27 ter short train
- Concurrent DTMF, FSK, and tone reception
- Voice mode transmission/reception
- Half-duplex (2-wire)
- Programmable maximum transmit level:
  - 0 dBm to –15 dBm
- Programmable transmit analog attenuation:
  - 0 dB to 14 dB in 2 dB steps
- Receive dynamic range: 0 dBm to –43 dBm
- Programmable dual tone generation
- Programmable tone detection
- Programmable turn-on and turn-off thresholds
- Programmable interface memory interrupt
- Diagnostic capability
  - – Allows telephone line quality monitoring
- Equalization
  - – Automatic adaptive equalizer
  - – Fixed digital compromise equalizer
- DTE interface: two alternate ports
  - – Selectable microprocessor bus (6500 or 8085)
  - – CCITT V.24 (EIA-232-D compatible) interface
- TTL and CMOS compatible
- Low power consumption: 275 mW (typical)
- Single Package
  - – 100-pin PQFP
  - – 64-pin QUIP
- Single +5VDC power supply
- Software compatible with R96MFX, R96EFX, R96SHF, and R96VFX modems

R96DFXL-CID (IC4) Hardware Interface Signals

Pin Signals – 100-Pin PQFP

Pin No.	Signal Name	I/O Type
1	GP03	IA/OB
2	GP04	IA/OB
3	GP05	IA/OB
4	GP06	IA/OB
5	GP07	IA/OB
6	0VD2	GND
7	0VD2	GND
8	D7	IA/OB
9	D6	IA/OB
10	D5	IA/OB
11	D4	IA/OB
12	D3	IA/OB
13	D2	IA/OB
14	D1	IA/OB
15	D0	IA/OB
16	0VD2	GND
17	0VA	GND
18	RAMPIN	R
19	NC	
20	NC	
21	0VA	GND
22	+5VD2	PWR
23	0VD1	GND
24	SWGAINI	R
25	ECLKIN1	R
26	SYNCIN1	R
27	NC	
28	NC	
29	NC	
30	0VA	GND
31	NC	
32	NC	
33	NC	
34	DAIN	R
35	ADOUT	R
36	BYPASS	IC
37	RCVI	R
38	TXLOSS3	IC
39	TXLOSS2	IC
40	TXLOSS1	IC
41	NC	
42	NC	
43	0VA	GND
44	TXOUT	AA
45	RXIN	AB
46	+5VA	PWR
47	0VA	GND
48	AGD	R
49	AOUT	R
50	0VD1	GND
51	NC	
52	$\overline{\text{IRQ}}$	OC
53	$\overline{\text{WRITE}}$-R/$\overline{\text{W}}$	IA
54	$\overline{\text{CS}}$	IA
55	$\overline{\text{READ}}$-ϕ2	IA
56	RS4	IA
57	RS3	IA
58	RS2	IA
59	RS1	IA
60	RS0	IA
61	GP13	IA/OB
62	NC	
63	$\overline{\text{GP11}}$	IA/OB
64	$\overline{\text{RTS}}$	IA
65	$\overline{\text{EN85}}$	R
66	0VD2	GND
67	$\overline{\text{PORI}}$	ID
68	XTLI	R
69	XTLO	R
70	XCLK	OD
71	YCLK	OD
72	+5VD1	PWR
73	DCLK1	R
74	SYNCIN2	R
75	GP16	IA/OB
76	GP17	IA/OB
77	0VD2	GND
78	$\overline{\text{CTS}}$	OA
79	TXD	IA
80	0VD2	GND
81	0VD2	GND
82	DCLK	OA
83	EYESYNC	OA
84	EYECLKX	OA
85	EYECLK	OA
86	EYEX	OA
87	ADIN	R
88	DAOUT	R
89	0VD2	GND
90	EYEY	OA
91	GP21	IA/OB
92	0VD2	GND
93	GP20	IA/OB
94	GP19	IA/OB
95	$\overline{\text{RXD}}$	OA
96	$\overline{\text{RLSD}}$	OA
97	0VD2	GND
98	RCVO	R
99	SWGAINO	R
100	GP02	IA/OB

Notes:
1. NC = No connection; leave pin disconnected (open).
2. I/O Type: = Digital signals: see Table 9;
   Analog signals: see Table 10.
3. R = Required modem inter-connection; no connection to host equipment.

[3] Circuit description of TEL/LIU PWB

(1) TEL/LIU block operational description

1) Block diagram

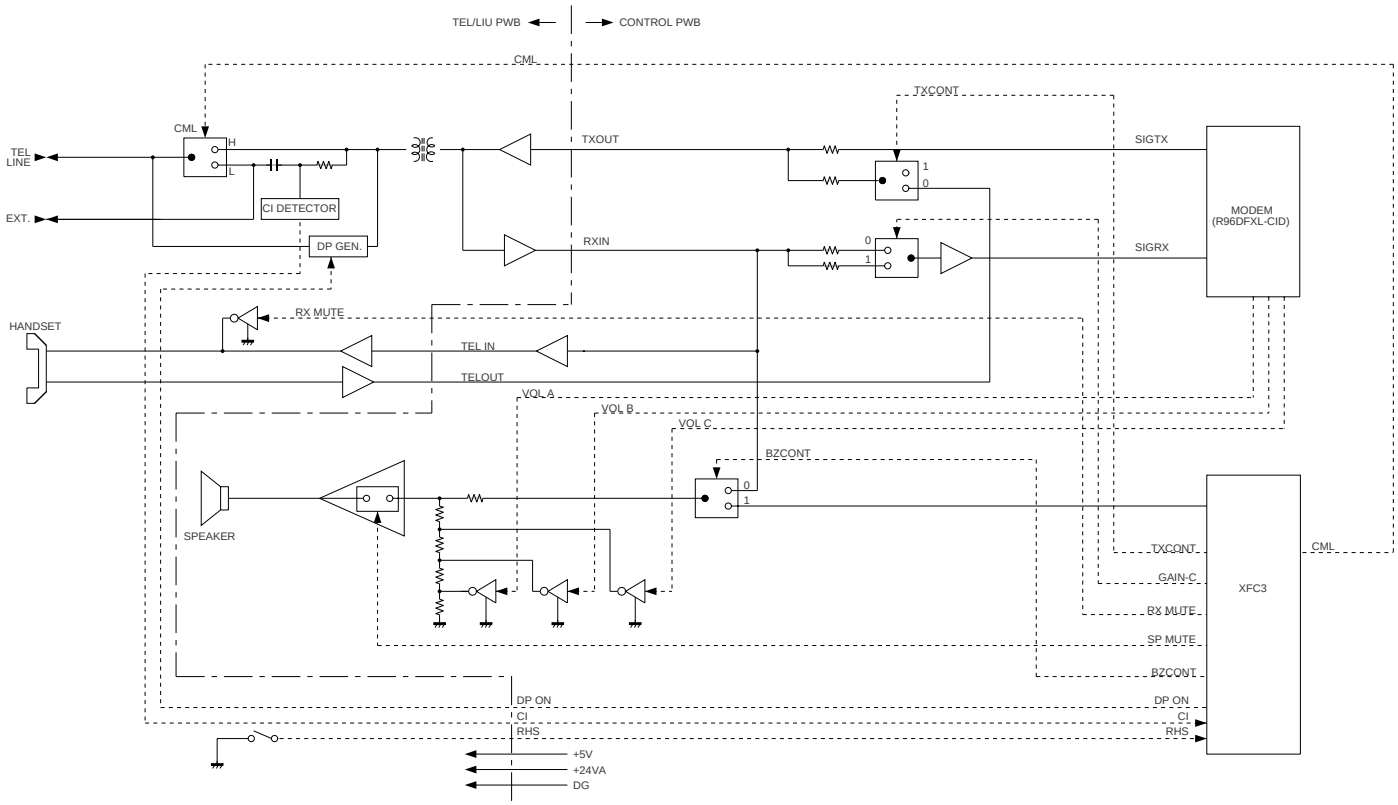


Fig. 5

2) Circuit description

The TEL/LIU PWB is composed of the following 9 blocks.

1. Surge protection circuit
2. Noise filter
3. Dial pulse generation circuit
4. CML relay
5. Matching transformer
6. Hybrid circuit
7. Signal selection
8. Cl detection circuit
9. Power supply and bias circuit

3) Block description

1. Surge Protection circuit

This circuit protects the circuit from the surge voltage occurring on the telephone line.

- The AR1, AR2 protects the circuit from the 425V or higher line surge voltages.

2. Noise filter

The noise filter comprises the RF choke coil, L4A, L4B.

3. Dial pulse generation circuit

The pulse dial generation circuit comprises the photo-coupler PC2, PC3, polarity guard REC1, and resistor R1.

The photo-coupler PC3 shunts the line current using the DP signal before transmitting the dial signal, then turns off the CML relay.

After the pulse dial signal is transmitted by turning on/off the DP signal, the CML relay is turned on again.

4. CML relay

The CML relay switches over connection to the matching transformer T1 while the FAX or built-in telephone is being used.

5. Matching transformer

The matching transformer performs electrical insulation from the telephone line and impedance matching for transmitting the TEL/FAX signal.

6. Hybrid circuit

The hybrid circuit performs 2-wire-to-4-wire conversion using the IC101 of operational amplifier, transmits the voice transmission signal to the line, and feeds back the voice signal to the voice reception circuit as the side tone.

7. Signal selection

The following signals are used to control the transmission line of TEL/FAX signal. For details, refer to the signal selector matrix table.

[Control signals from output port]

<table>
<tr><th>Signal Name</th><th>Description</th></tr>
<tr><td>CML
(The circuit is located in the TEL/LIU PWB.)</td><td>Line connecting relay and DP generating relay
H: Line make
L: Line break</td></tr>
<tr><td>SP MUTE
(The circuit is located in the TEL/LIU PWB.)</td><td>Speaker tone mute control signal
H: Muting (Power down mode)
L: Muting cancel (Normal operation)</td></tr>
<tr><td>RX MUTE</td><td>Handset reception mute control signal
H: Muting
L: Muting cancel</td></tr>
<tr><td>DP ON</td><td>DP generating relay
H: DP make
L: DP break</td></tr>
<tr><td>VOL A
VOL B
VOL C

(The circuit is located in the control PWB.)</td><td>Speaker volume control signal
VRSEL1 VRSEL2 matrix
<table>
<tr><th>VOL A</th><th>VOL B</th><th>VOL C</th><th>RING</th><th>SP.REC.</th><th>BUZZER /DTMF</th></tr>
<tr><td>H</td><td>L</td><td>L</td><td>High</td><td>High</td><td>—</td></tr>
<tr><td>L</td><td>H</td><td>L</td><td>—</td><td>Middle</td><td>—</td></tr>
<tr><td>L</td><td>L</td><td>H</td><td>Middle</td><td>—</td><td>—</td></tr>
<tr><td>L</td><td>L</td><td>L</td><td>Low</td><td>Low</td><td>Fixed</td></tr>
</table></td></tr>
<tr><td>TXCONT
(The circuit is located in the control PWB.)</td><td>TXOUT mute signal
H: Signal sending, when transmitting
L: During reception, transmission mute, (during standby)</td></tr>
<tr><td>GAIN-C
(The circuit is located in the control PWB.)</td><td>Reception gain switching signal
L: When connected to line, 1: 1 gain
H: When not connected to line, HIGH gain</td></tr>
<tr><td>BZCONT
(The circuit is located in the control PWB.)</td><td>Speaker output signal switching
H: Buzzer signal output
L: When monitoring line signal</td></tr>
</table>

[Signals for status recognition according to input signals]

Signal Name	Function
$\overline{\text{RHS}}$	H: The handset is in the on-hook state. L: The handset is in the off-hook state.
CI	Incoming call (CI) detection signal.

[Other signals]

Signal Name	Function
TEL IN	Receiving signal from line or modem
TEL OUT	Transfer signal to line
SPOUT	Speaker output signal
TXOUT	Transmission (DTMF) analog signal output from modem
RXIN	Reception (DTMF, others) analog signal input into modem

NO	Signal Name (CNLIUA)	NO	Signal Name (CNLIUA)
1	TELOUT	7	RXIN
2	TELIN	8	TXOUT
3	TELMUTE	9	CML
4	CI	10	+24VA
5	HS	11	+5V
6	$\overline{\text{RHS}}$	12	DG

NO	Signal Name (CNLIUB)	NO	Signal Name (CNLIUB)
1	RXMUTE	3	DPMUTE
2	DPON	4	E-RLY

8. CI detection circuit

The CI detection circuit detects the CI signals. A CI signal, which is provided to the photo-coupler PC6 through the C4 (0.56 μF), R2 (10 K), and ZD3 when the ring signal is inputted from the telephone line.

9. Power supply and bias circuits

The voltages of +5V and +24VA are supplied from the control PWB unit.

(Example: Fax signal send)

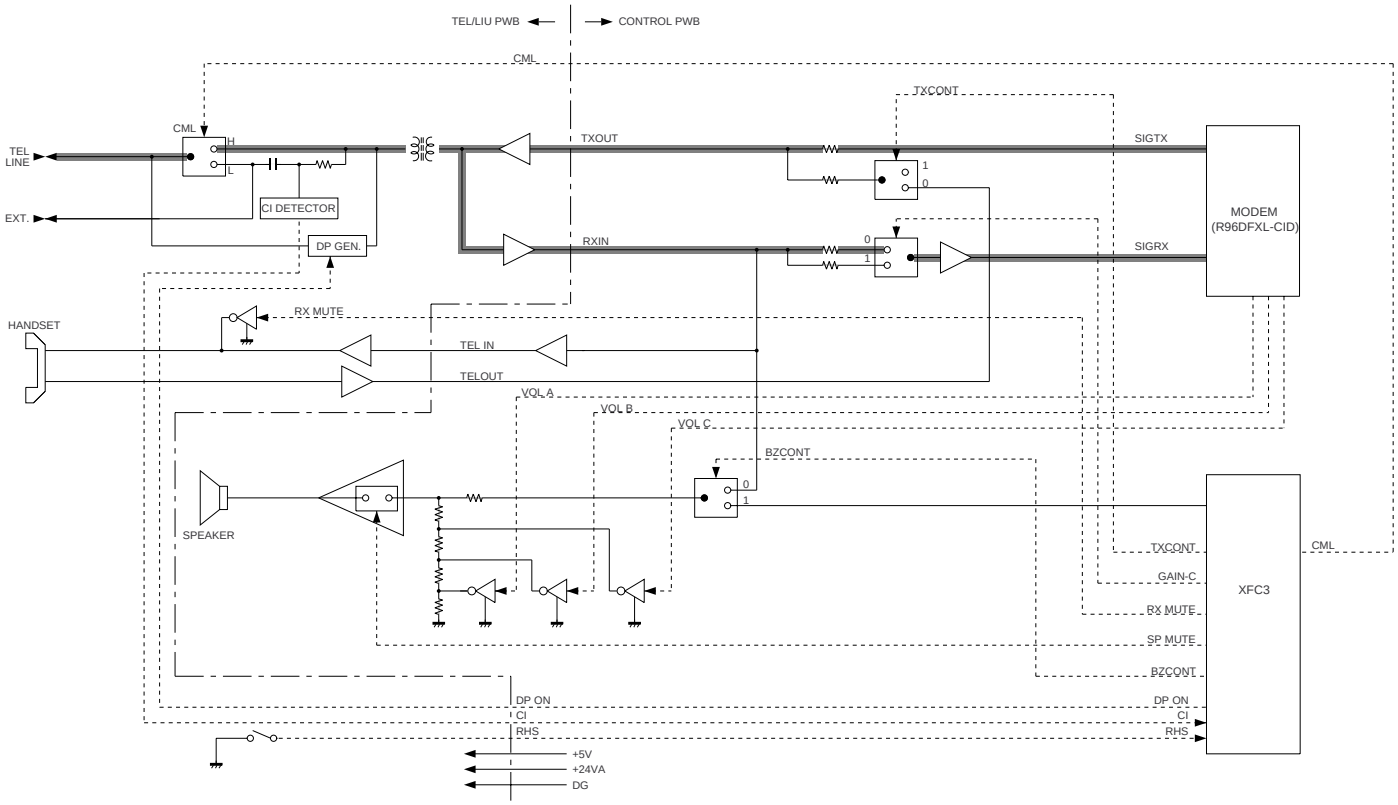


Fig. 6

[4] Circuit description of power supply PWB

1. Block diagram

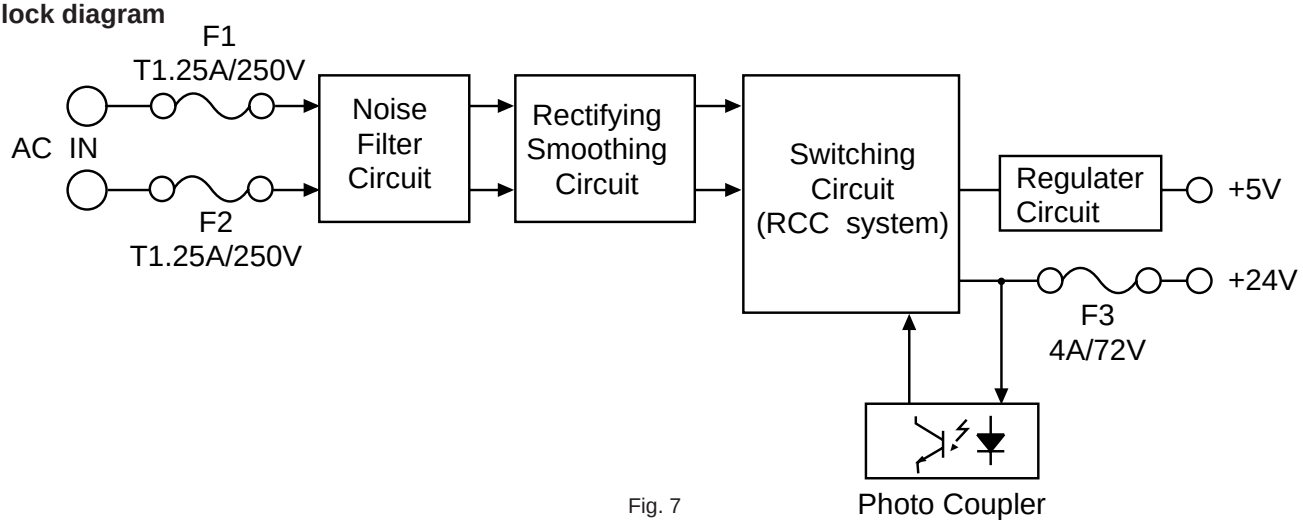


Fig. 7

2-1. Noise filter circuit

The input noise filter section is composed of L and C, which reduces normal mode noise from the AC line and common mode noise to the AC line.

2-2. Rectifying/smoothing circuit

The AC input voltage is rectified by diode D1, 2, 3, 4 and smoothed by capacitor C5 to supply DC voltage to the switching circuit section.

Power thermistor TH1 suppresses inrush current at power switch-on.

2-3. Switching circuit

This circuit employs the self excited ringing choke convertor (RCC) system. In this system, the DC voltage supplied from the rectifying/smoothing section is converted into high frequency pulses by ON/OFF repetition of MOS FET Q1.

Energy is charged in the primary winding of T1 during ON period of Q1, and discharged to the secondary winding during OFF period.

The output voltage is controlled by adjusting ON period of Q1 which changes charge time of C9 through operation of photo-coupler PC1 from +24V output.

The overcurrent protection is performed by bringing Q1 to OFF state through detection of voltage increase in the auxiliary winding of T1 by ZD2 and R9.

The overvoltage protection is performed by operating the overcurrent protection circuit through destruction of zener diode ZD4 and short-circuiting of load.

2-4. +5V circuit

Each DC voltage supplied by rectifying the output of transformer T1 with diode D8 is stabilized by 3-terminal regulator IC1.

2-5. VTH circuit

VTH output is supplied through the relay RY1.
Relay RY1 is operated by VTH-ON signal.

[5] Circuit description of CIS unit

1. CIS

Cis is an image sensor which puts the original paper in close contact with the full-size sensor for scanning, being a monochromatic type with the pixel number of 1,728 dots and the main scanning density of 8 dots/mm.

It is composed of sensor, rod lens, LED light source, light-conductive plate, control circuit and so on, and the reading line and focus are previously adjusted as the unit.
Due to the full-size sensor, the focus distance is so short that the set is changed from the light weight type to the compact type.

2. Waveforms

The following clock is supplied from XFC3 of the control board, and VO is output.

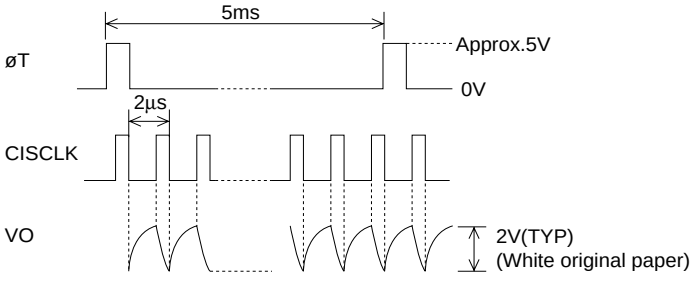
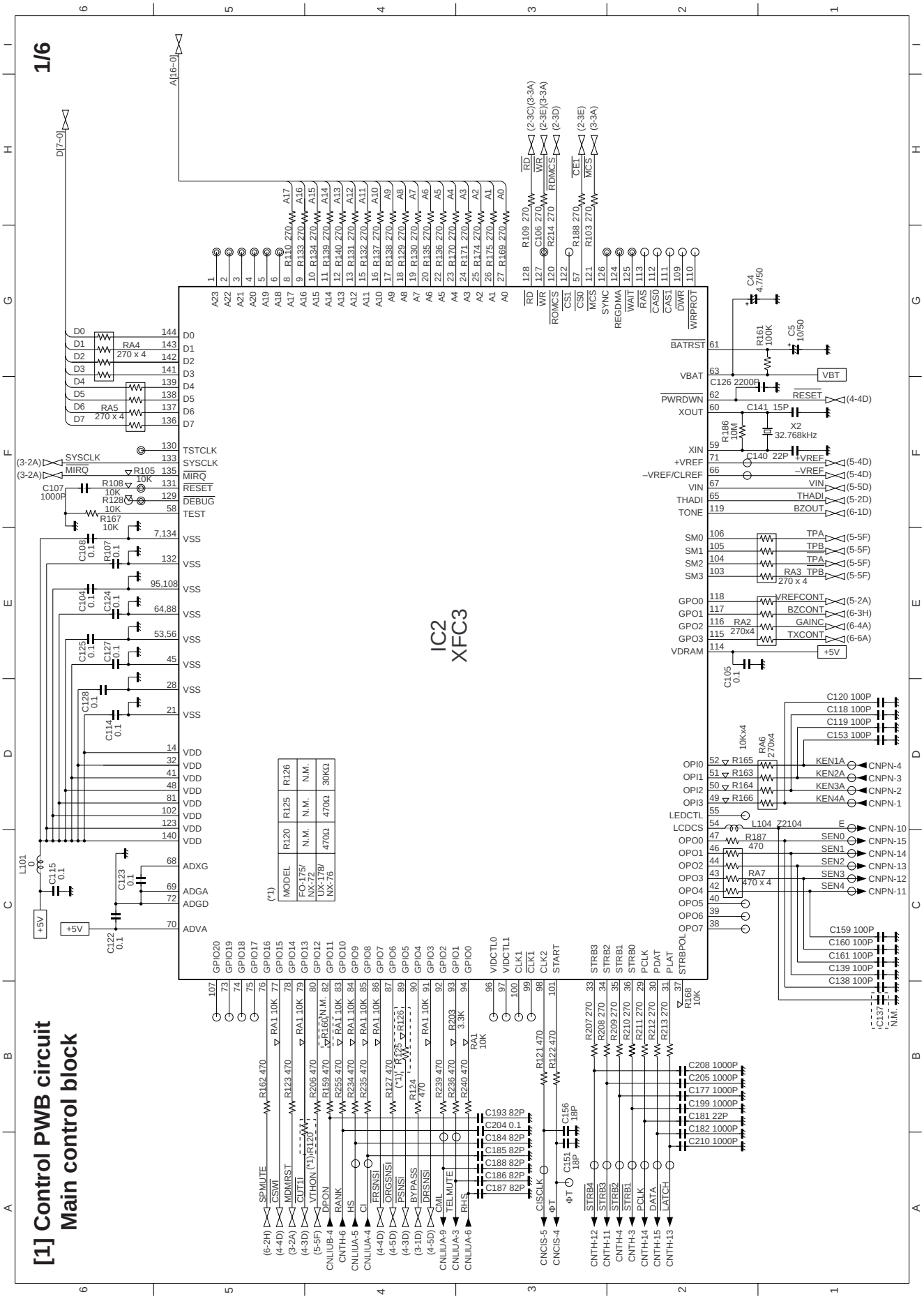


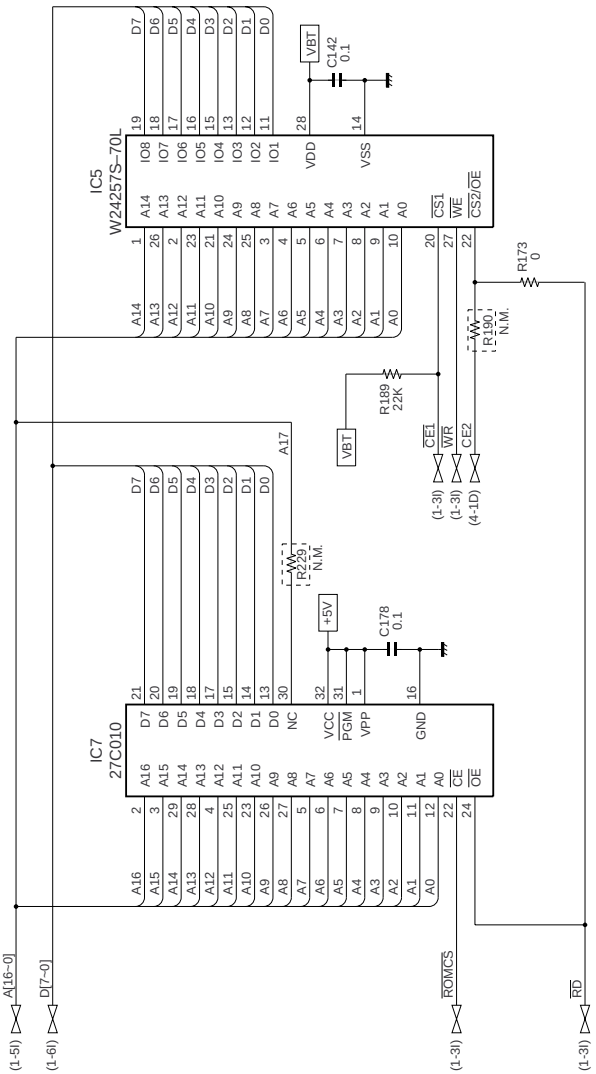
Fig. 8

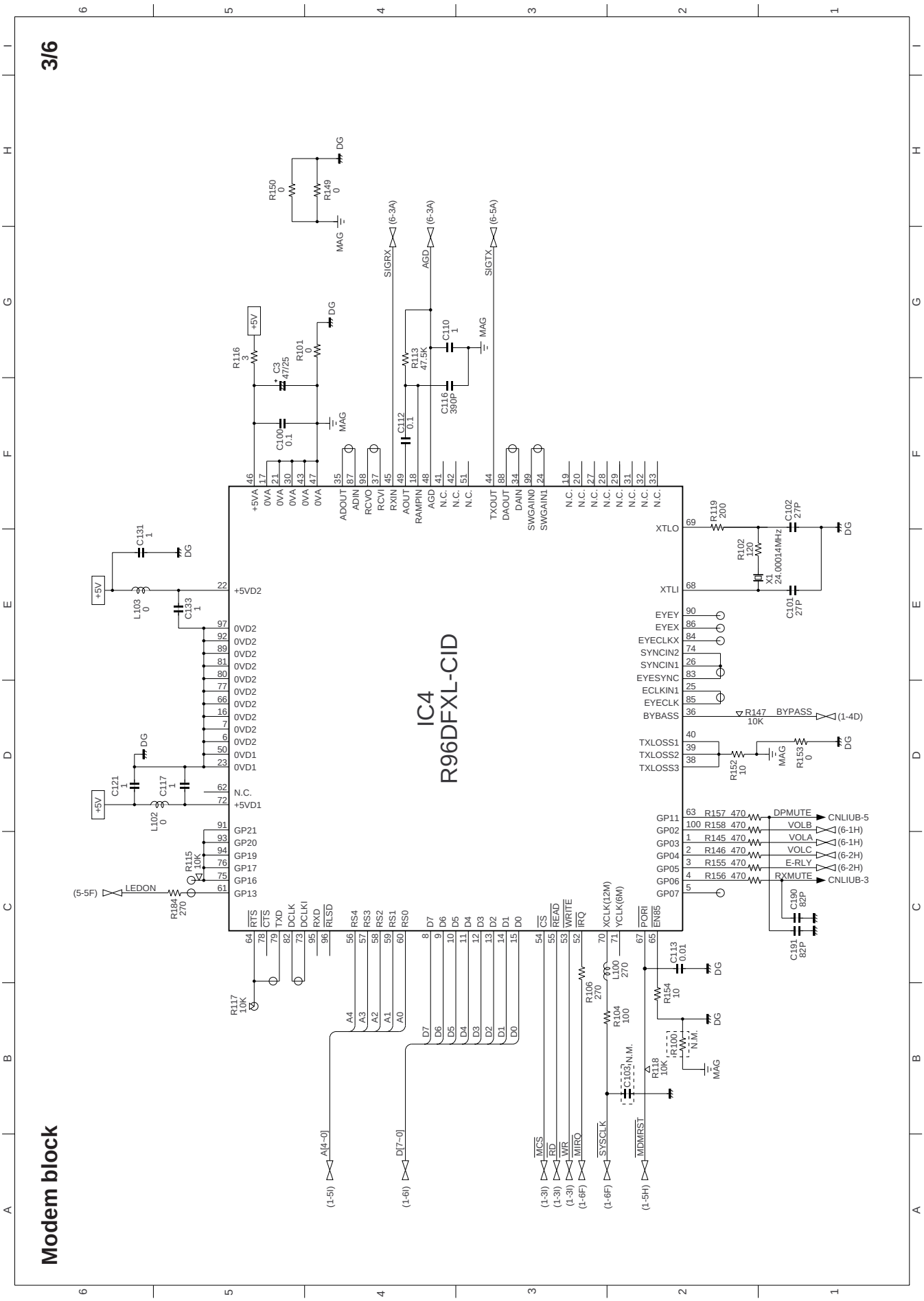
CHAPTER 6. CIRCUIT SCHEMATICS AND PARTS LAYOUT

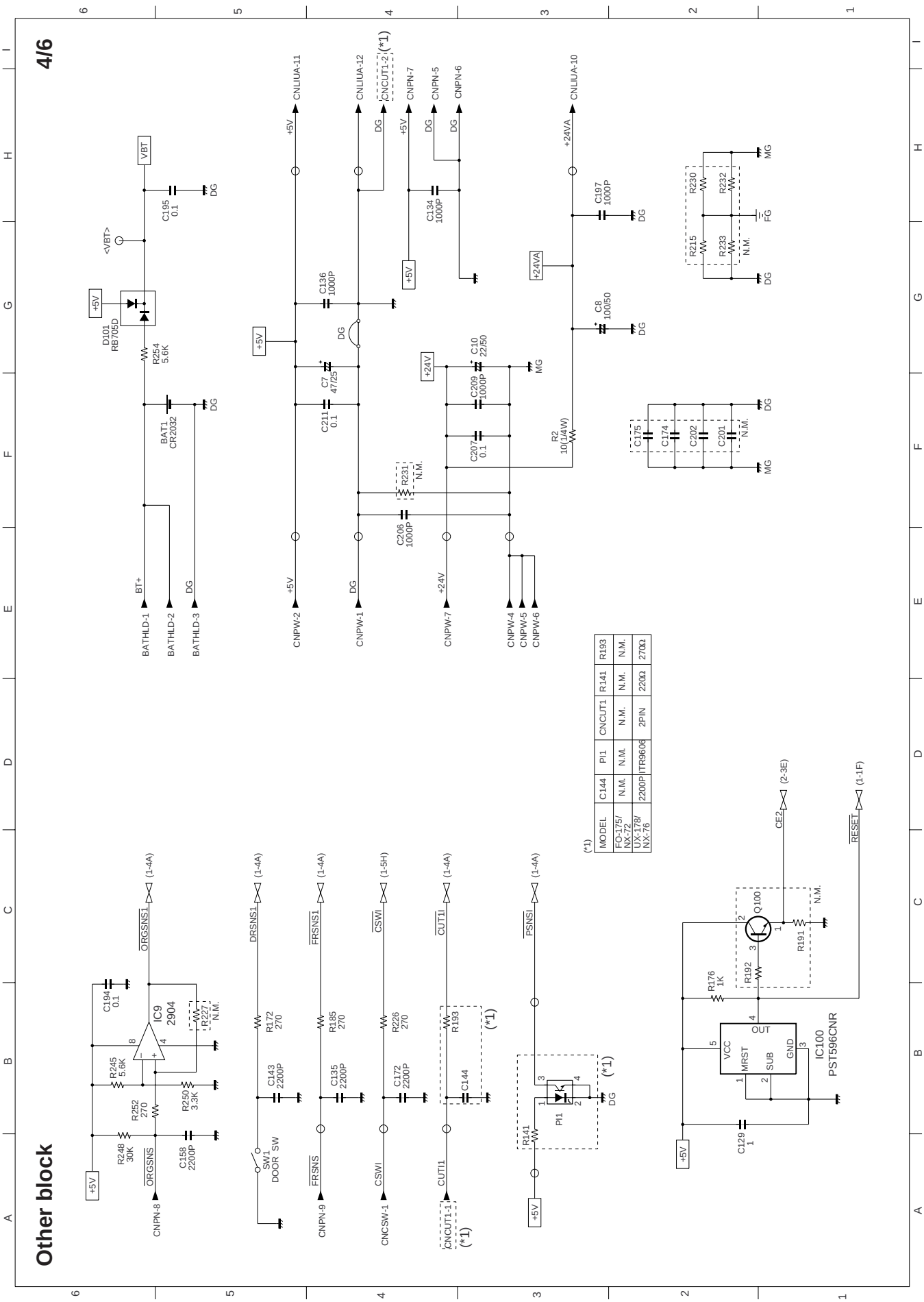


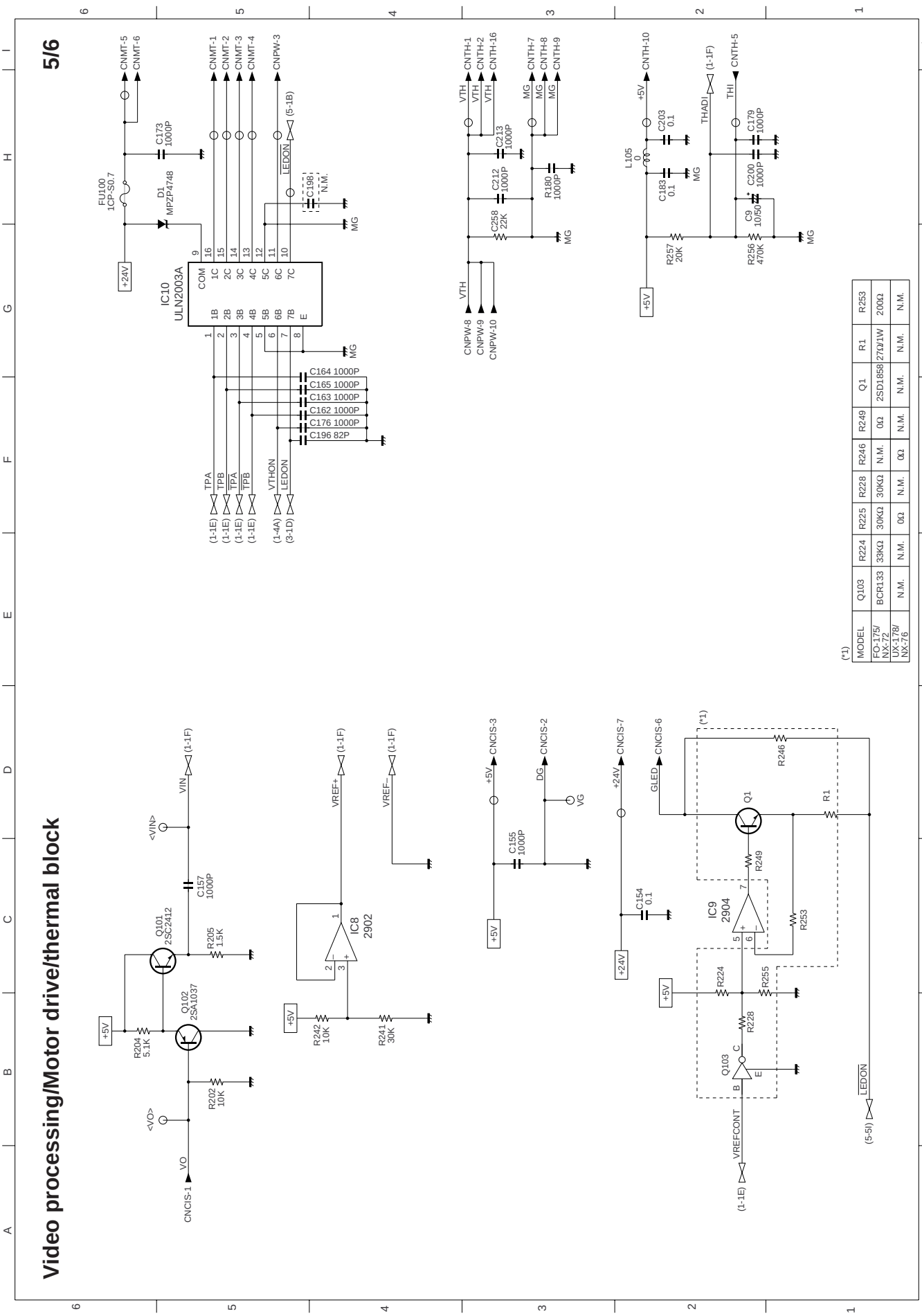
2/6

Memory block



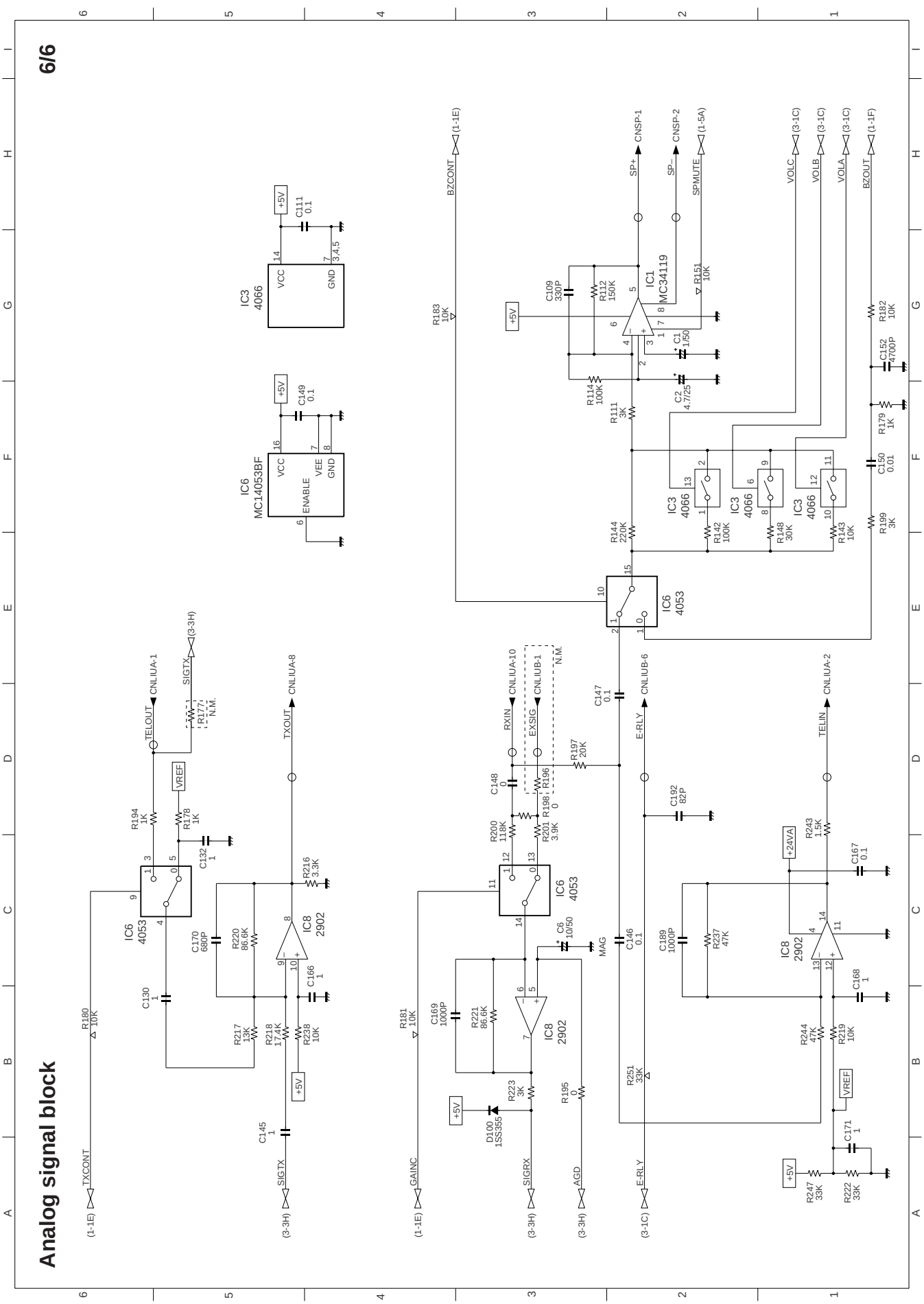

3/6
Modem block
IC4
R96DFXL-CID
XTLO
XTLI
X1
24.00014MHz
EYEY
EYEX
EYECLKX
SYNCIN2
SYNCIN1
EYESYNC
ECLKIN1
EYECLK
BYBASS
TXLOSS1
TXLOSS2
TXLOSS3
GP11
GP02
GP03
GP04
GP05
GP06
GP07
DPMUTE
VOLB
VOLA
VOLC
E-RLY
RXMUTE
CNLIUB-5
CNLIUB-3
+5VD2
0VD2
0VD1
+5VD1
GP21
GP20
GP19
GP17
GP16
GP13
LEDON
RTS
CTS
TXD
DCLK
DCLKI
RXD
RLSD
RS4
RS3
RS2
RS1
RS0
D7
D6
D5
D4
D3
D2
D1
D0
CS
READ
WRITE
IRQ
XCLK(12M)
YCLK(6M)
PORI
EN85
SIGRX
AGD
SIGTX
ADOUT
ADIN
RCVO
RCVI
RXIN
AOUT
RAMPIN
AGD
TXOUT
DAOUT
DAIN
SWGAIN0
SWGAIN1
A[4-0]
D[7-0]
MCS
RD
WR
MIRQ
SYSCLK
MDMRST
MAG
DG
+5V
N.M.


4/6
Other block
VBT
<VBT>
D101 RB705D
R254 5.6K
BAT1 CR2032
C195 0.1
BATHLD-1
BATHLD-2
BATHLD-3
BT+
C136 1000P
C7 47/25
C211 0.1
C206 1000P
R231 N.M.
CNPW-1
CNPW-2
CNPW-7
CNPW-4
CNPW-5
CNPW-6
CNLIUA-11
CNLIUA-12
CNCUT1-2 (*1)
CNPN-7
CNPN-5
CNPN-6
C134 1000P
C209 1000P
C207 0.1
C10 22/50
R2 10(1/4W)
+24VA
CNLIUA-10
C197 1000P
C8 100/50
C175
C174
C202
C201 N.M.
R230
R232
R215
R233 N.M.
FG
ORGSNS1
DRSNS1
FRSNS1
CSWI
CUTI1
PSNSI
C194 0.1
IC9 2904
R227 N.M.
R245 5.6K
R252 270
R250 3.3K
R248 30K
C158 2200P
ORGSNS
CNPN-8
R172 270
C143 2200P
SW1 DOOR SW
FRSNS
CNPN-9
R185 270
C135 2200P
R226 270
C172 2200P
CSWI
CNCSW-1
R193
C144
CUTI1
CNCUT1-1 (*1)
(*1)
R141
PI1
(1-4A)
(1-5H)
(2-3E)
(1-1F)
CE2
RESET
Q100
R191 N.M.
R192
R176 1K
C129 1
IC100 PST596CNR
VCC
MRST
SUB
OUT
GND
+5V
DG
MG
+24V
(*1)
MODEL | C144 | PI1 | CNCUT1 | R141 | R193
FO-175/NX-72 | N.M. | N.M. | N.M. | N.M. | N.M.
UX-178/NX-76 | 2200P | TR9606 | 2PIN | 220Ω | 270Ω

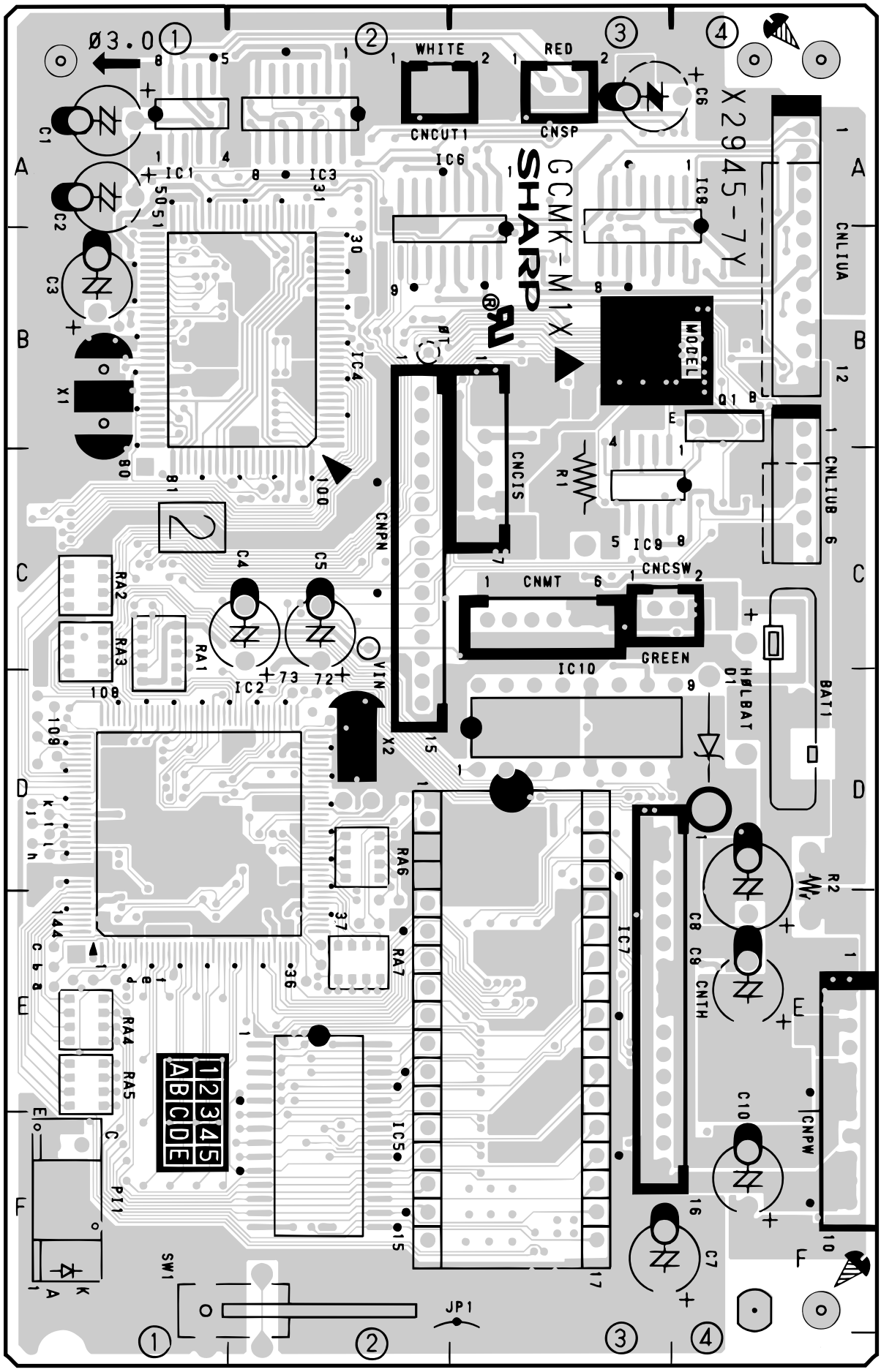


(*1)

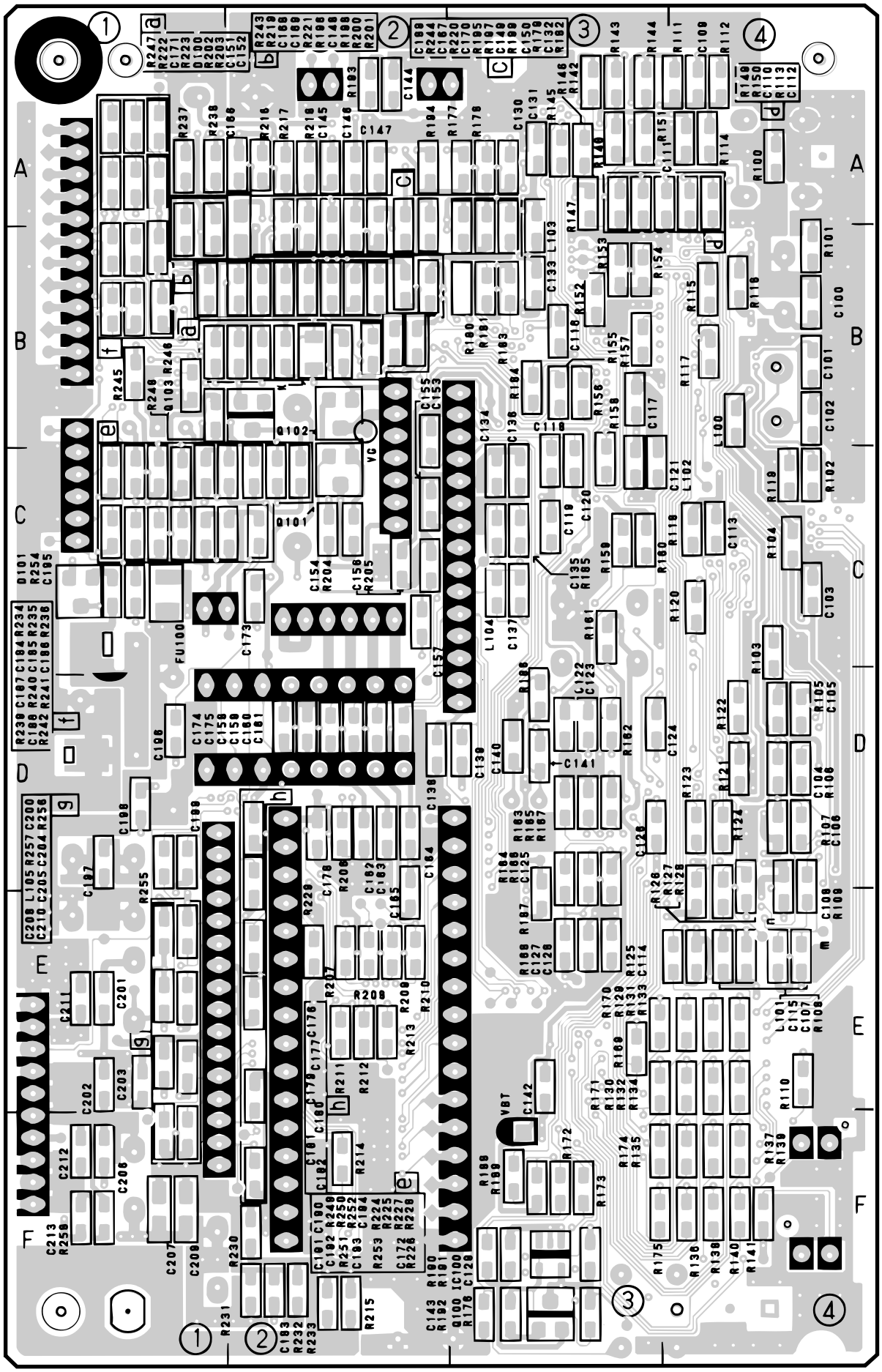
MODEL	Q103	R224	R225	R228	R246	R249	Q1	R1	R253
FO-175/ NX-72	BCR133	33KΩ	30KΩ	30KΩ	N.M.	0Ω	2SD1858	27Ω/1W	200Ω
UX-178/ NX-76	N.M.	N.M.	0Ω	N.M.	0Ω	N.M.	N.M.	N.M.	N.M.

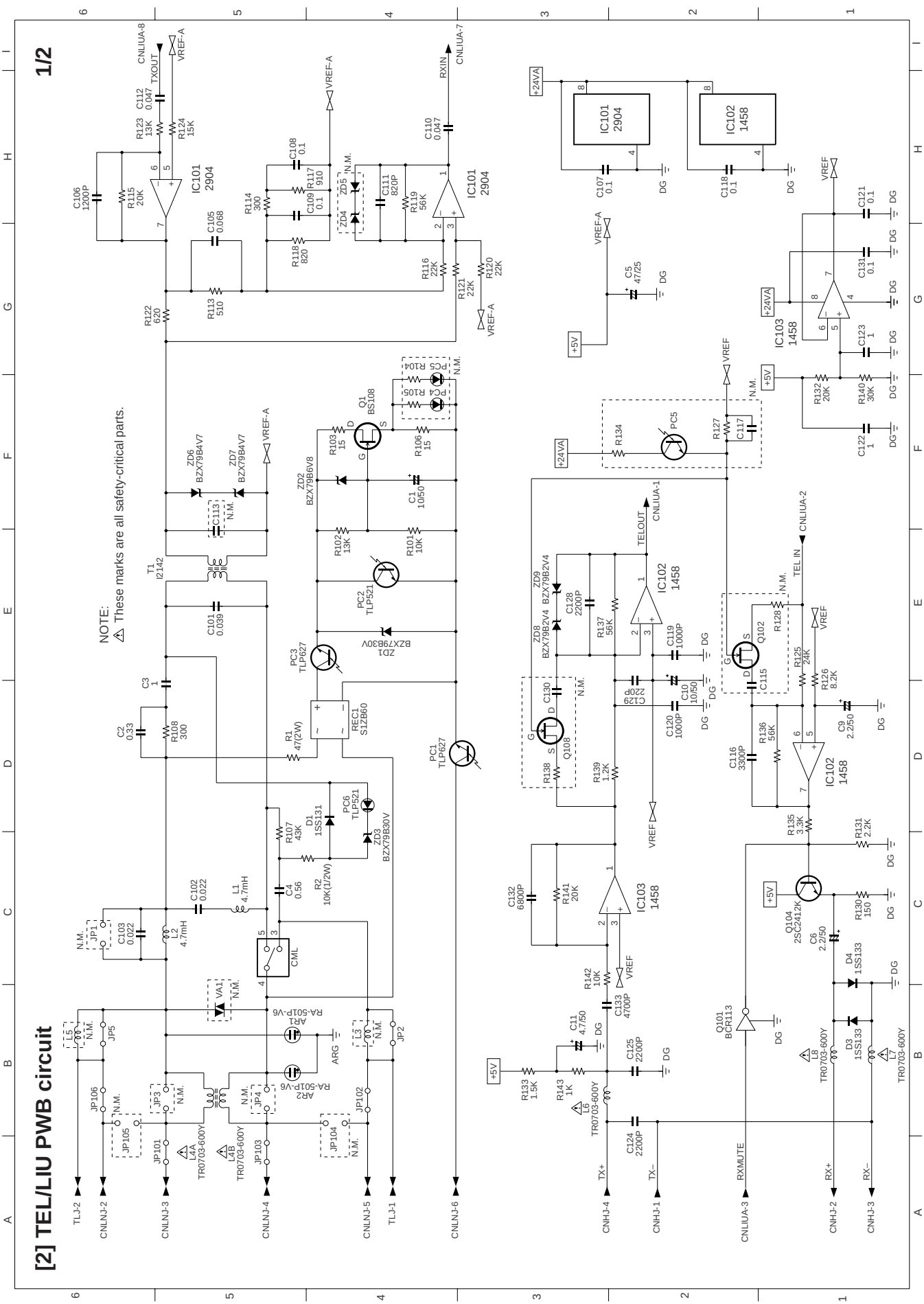

Analog signal block
6/6
IC1 MC34119
IC3 4066
IC6 4053
IC6 MC14053BF
IC8 2902
SP+
SP−
SPMUTE
CNSP-1
CNSP-2
BZCONT
BZOUT
VOLA
VOLB
VOLC
TELIN
TELOUT
TXOUT
RXIN
EXSIG
TXCONT
SIGTX
SIGRX
GAINC
AGD
MAG
E-RLY
VREF
+5V
+24VA
N.M.

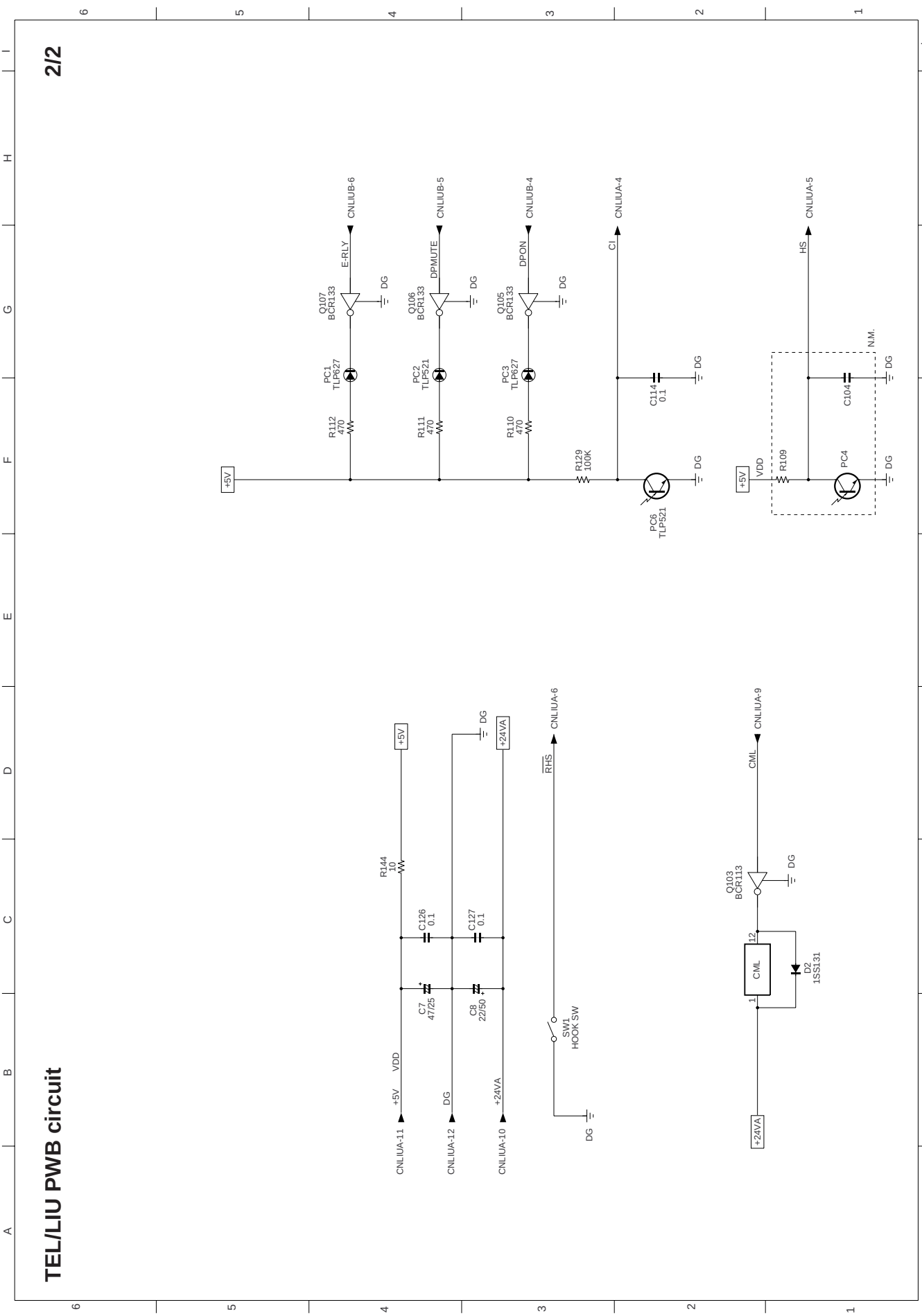
Control PWB parts layout (Top side)



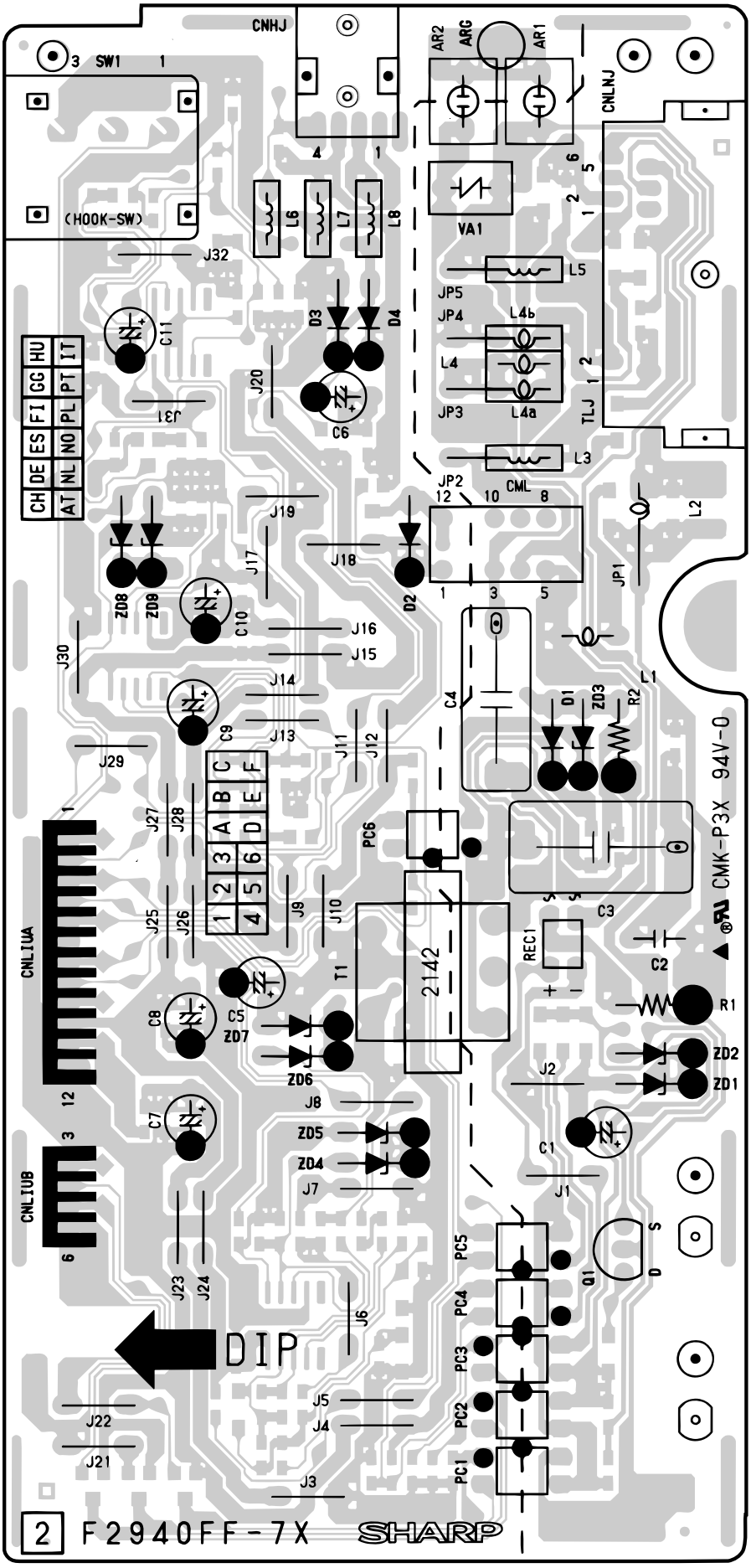
Control PWB parts layout (Bottom side)



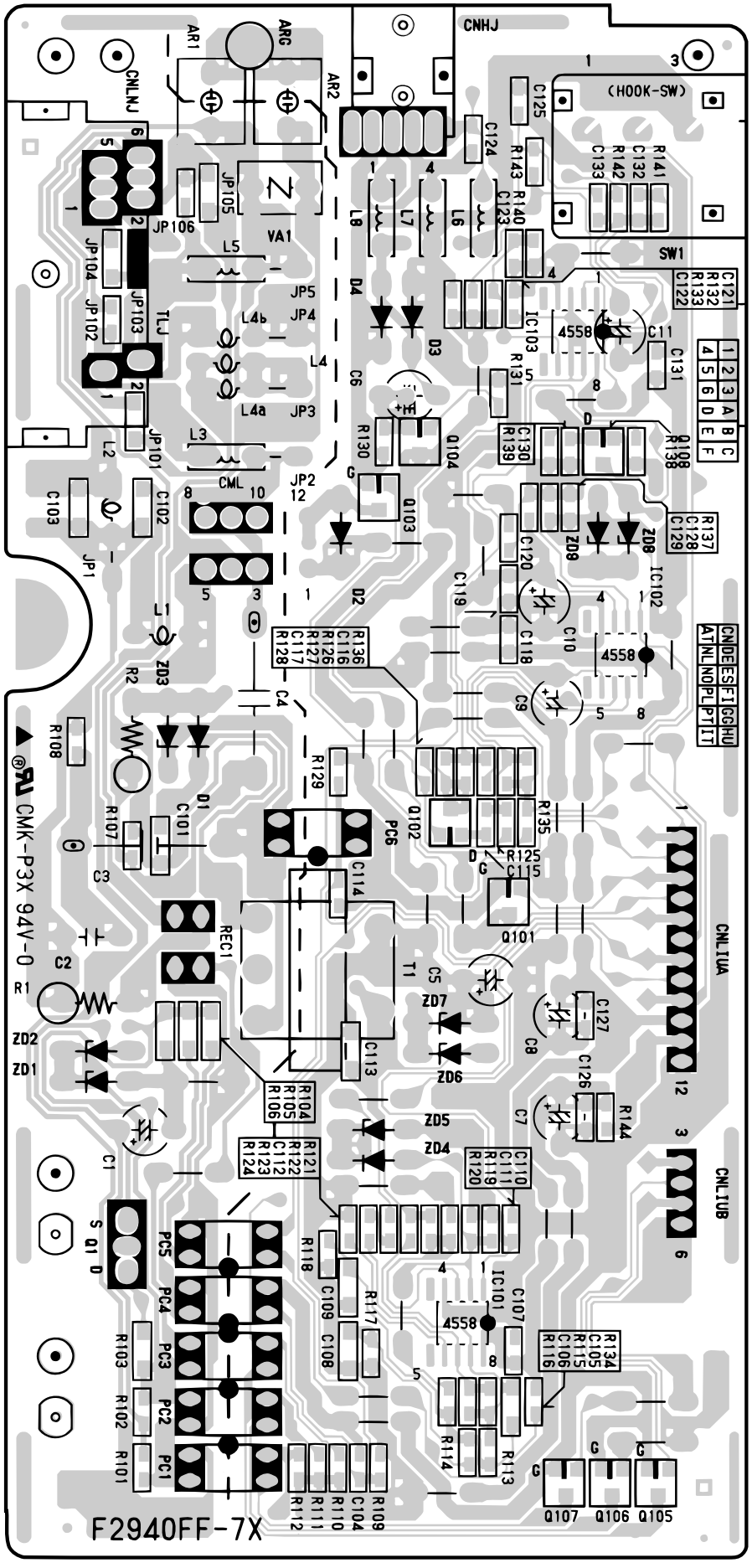

[2] TEL/LIU PWB circuit
1/2
NOTE:
⚠ These marks are all safety-critical parts.
IC101 2904
IC102 1458
IC103 1458
CNLIUA-1
CNLIUA-2
CNLIUA-3
CNLIUA-7
CNLIUA-8
CNLNJ-2
CNLNJ-3
CNLNJ-4
CNLNJ-5
CNLNJ-6
CNHJ-1
CNHJ-2
CNHJ-3
CNHJ-4
TLJ-1
TLJ-2
TELOUT
TEL IN
TXOUT
RXIN
TX+
TX–
RX+
RX–
RXMUTE
VREF
VREF-A
+5V
+24VA
DG
CML
N.M.


2/2
TEL/LIU PWB circuit
CNLIUB-6
E-RLY
Q107 BCR133
PC1 TLP627
R112 470
CNLIUB-5
DPMUTE
Q106 BCR133
PC2 TLP521
R111 470
CNLIUB-4
DPON
Q105 BCR133
PC3 TLP627
R110 470
CNLIUA-4
CI
C114 0.1
R129 100K
PC6 TLP521
CNLIUA-5
HS
N.M.
C104
R109
PC4
VDD
+5V
DG
R144 10
C126 0.1
C127 0.1
C7 47/25
C8 22/50
+24VA
CNLIUA-11
CNLIUA-12
CNLIUA-10
RHS
CNLIUA-6
SW1 HOOK SW
CNLIUA-9
CML
Q103 BCR113
D2 1SS131

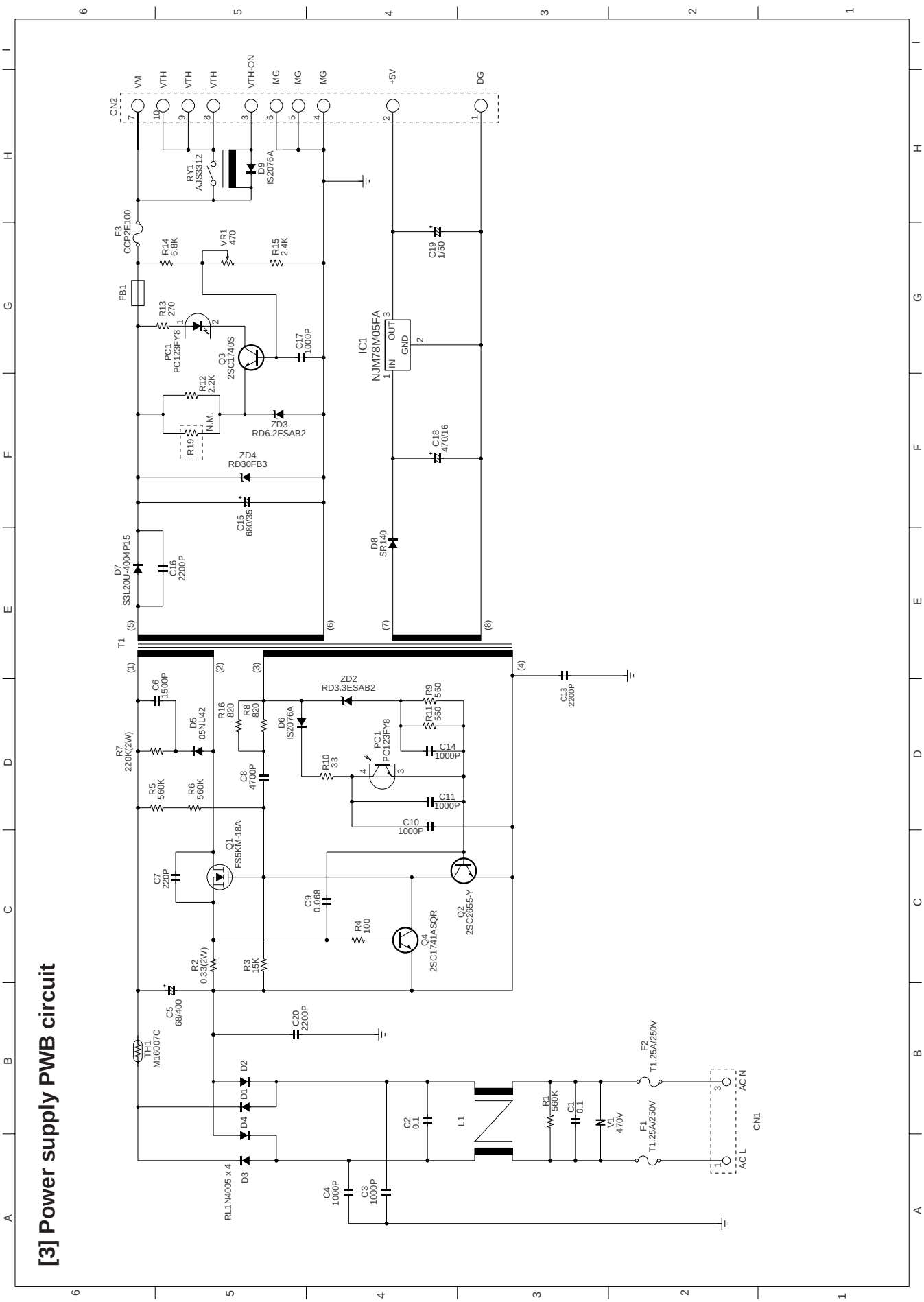
TEL/LIU PWB parts layout (Top side)



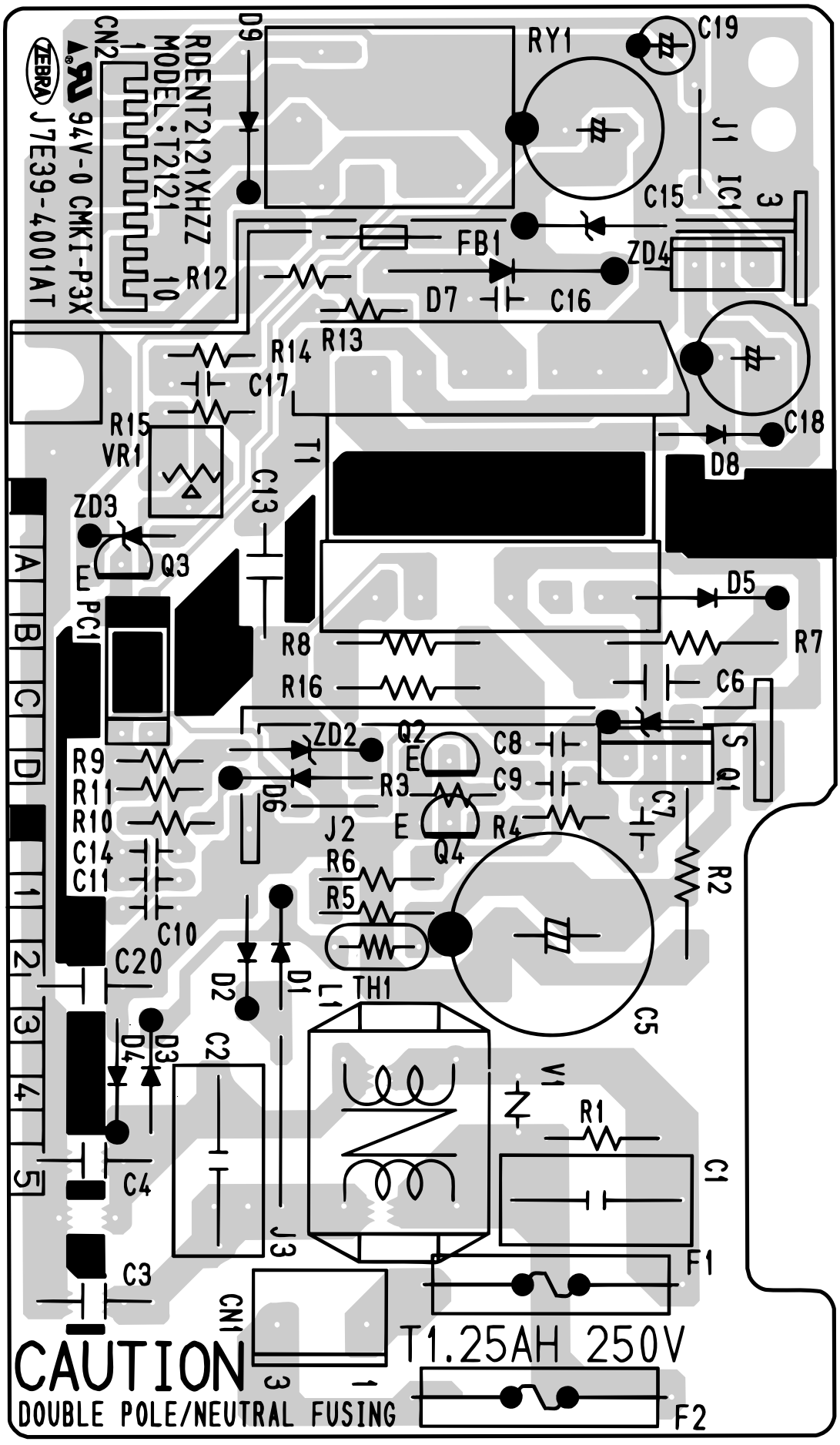
TEL/LIU PWB parts layout (Bottom side)



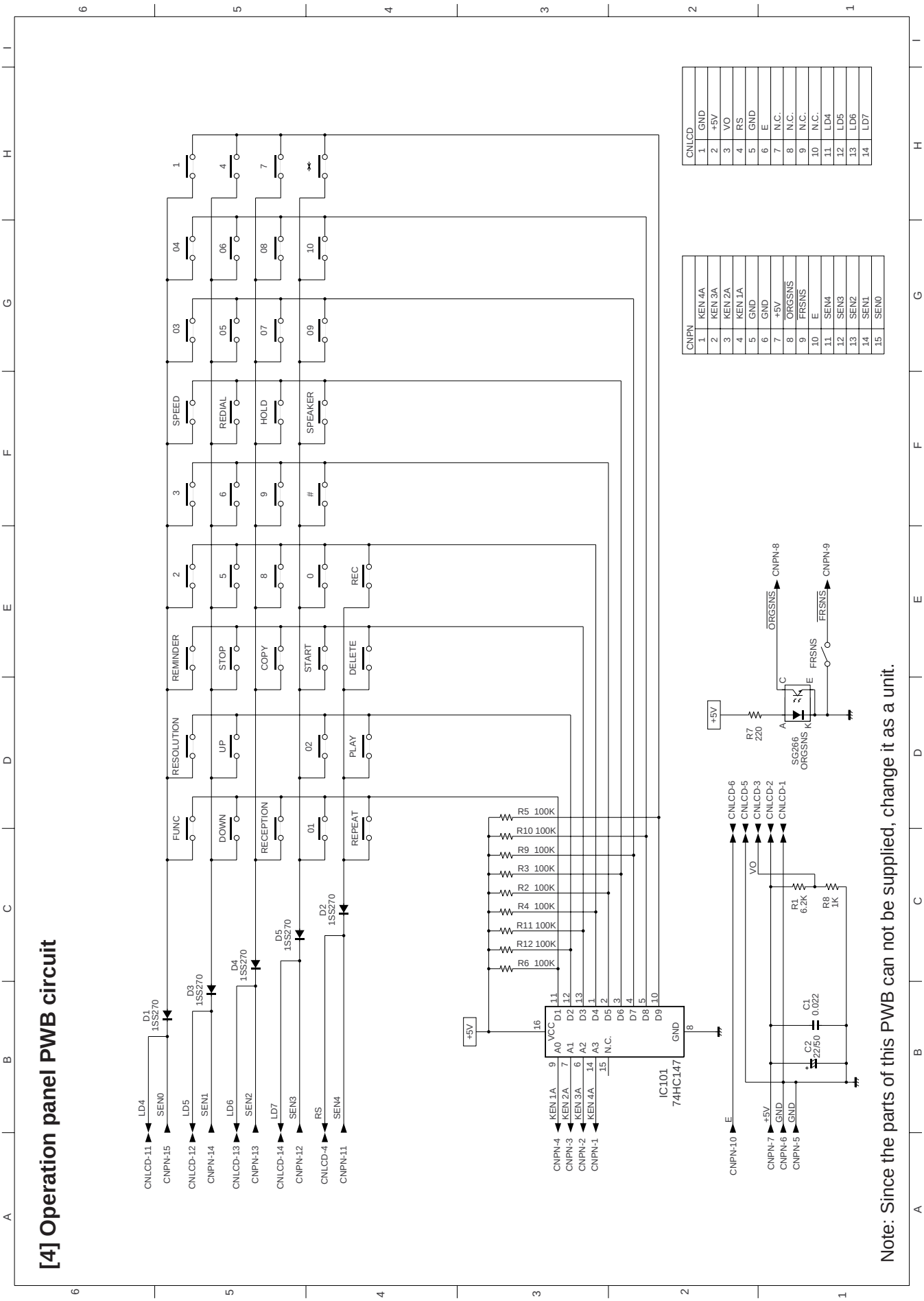
[3] Power supply PWB circuit



Power supply PWB parts layout



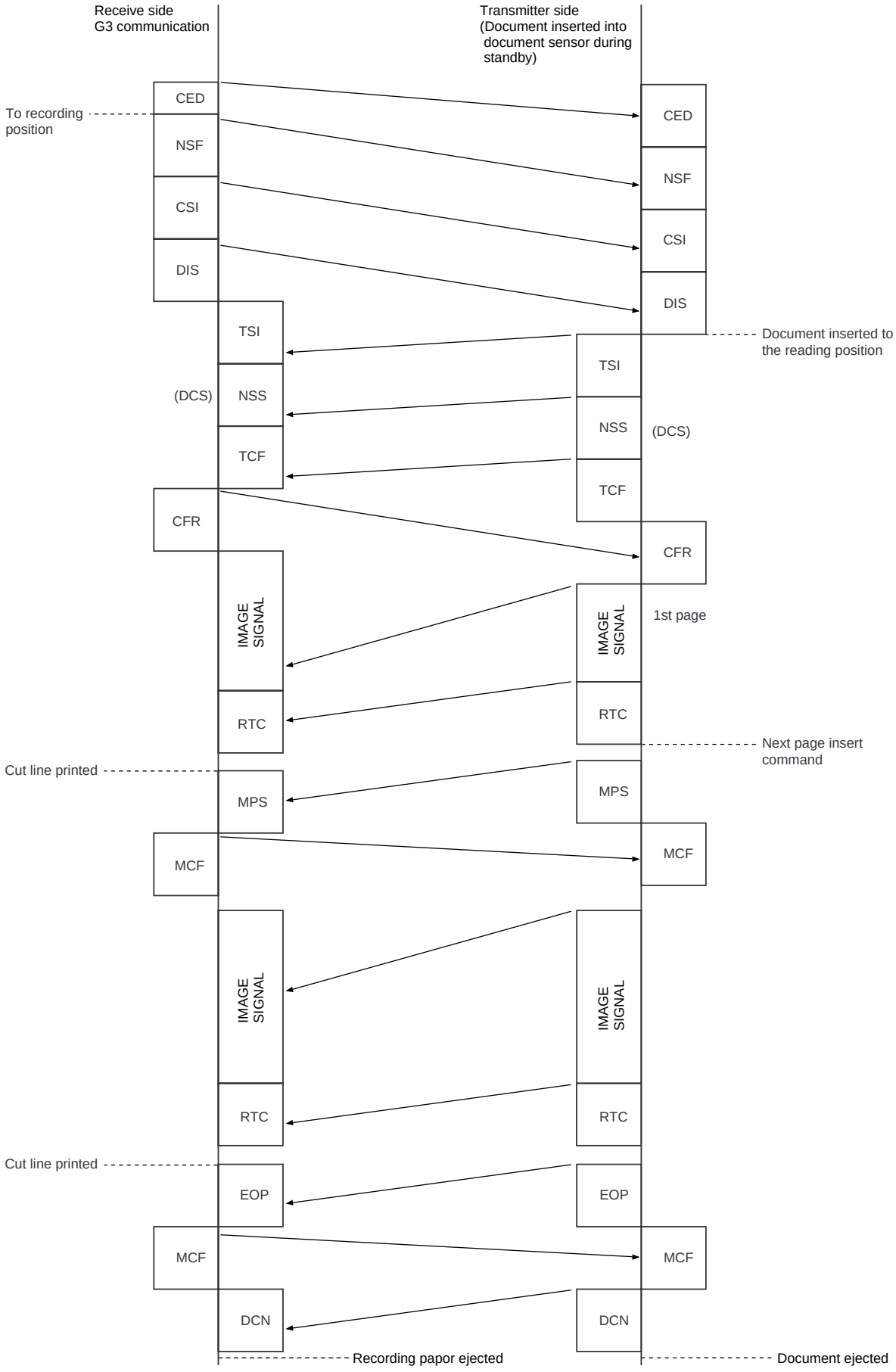
[4] Operation panel PWB circuit



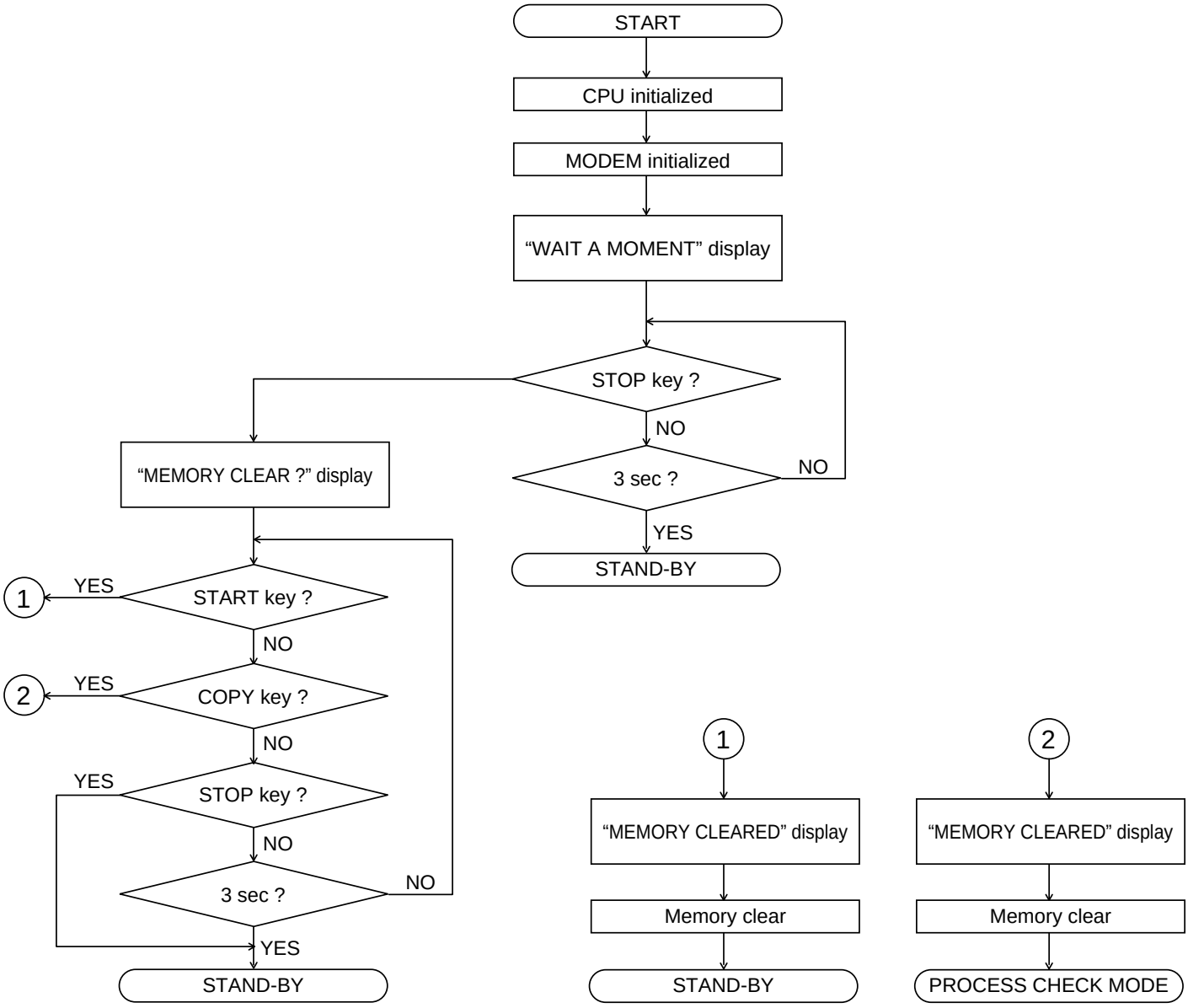
Note: Since the parts of this PWB can not be supplied, change it as a unit.

CHAPTER 7. OPERATION FLOWCHART

[1] Protocol



[2] Power on sequence



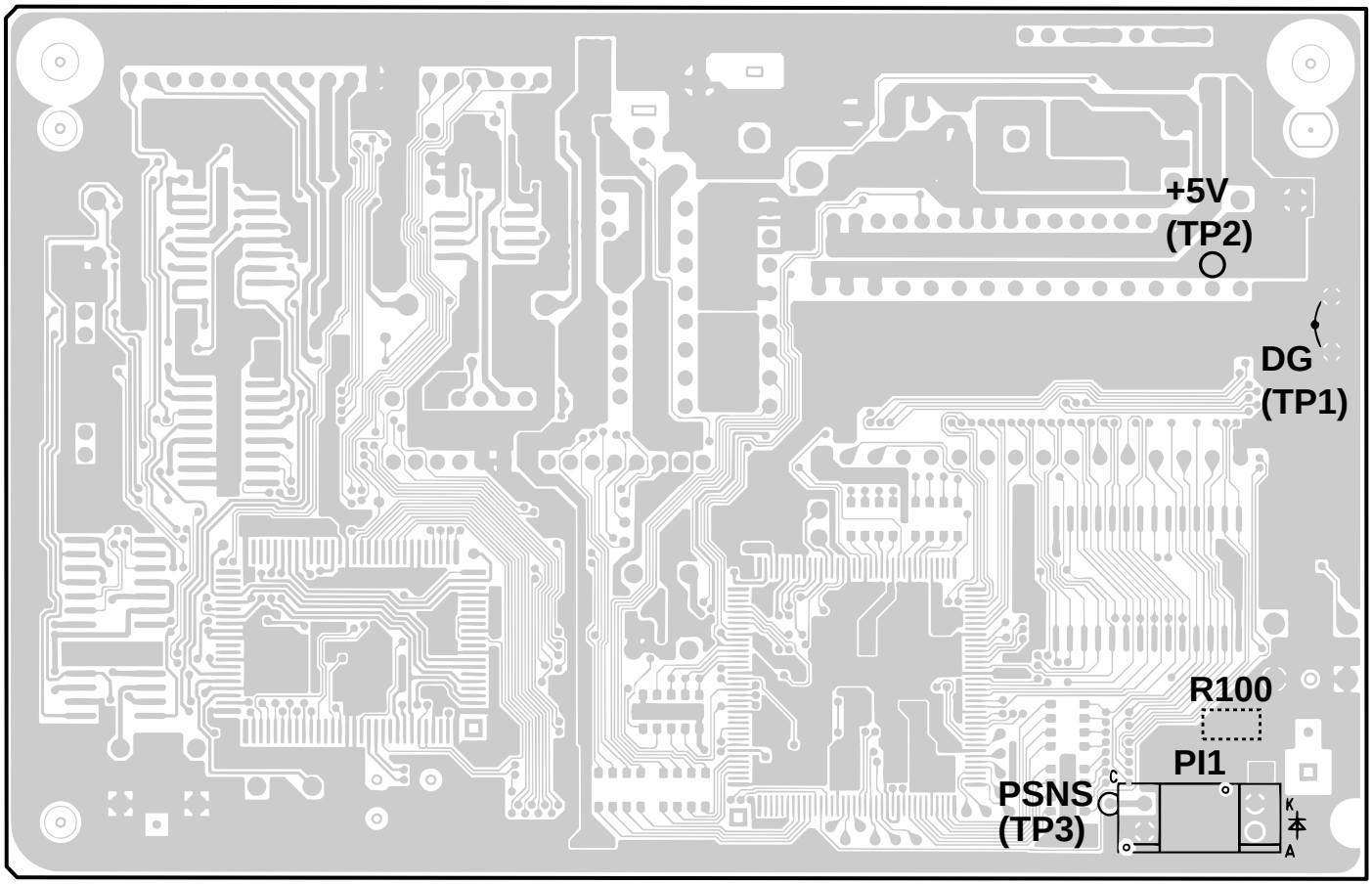
CHAPTER 8. OTHERS

[1] Service tools

1. List

NO.	PARTS CODE	DESCRIPTION	Q'TY	PRICE RANK
1	C P W B S 2 9 1 5 S C S 1	Relay board unit	1	BN
2	P S H E Z 3 3 5 4 S C Z Z	Shading wave memory standard paper	1	AD

Relay board unit

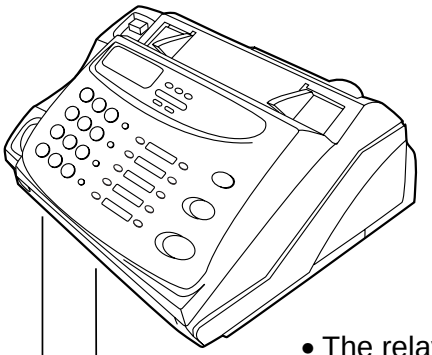


NO.	PARTS CODE	DESCRIPTION	Q'TY	PRICE RANK
1	C C N W – 4 7 5 6 S C 0 1	SPEAKER RELAY CABLE	1	AK
2	C C N W – 4 7 5 7 S C 0 1	PANEL RELAY CABLE	1	AW
3	C C N W – 4 7 5 8 S C 0 1	CIS RELAY CABLE	1	AQ
4	C C N W – 4 7 5 9 S C 0 1	HEAD RELAY CABLE	1	AX
5	C C N W – 4 7 6 0 S C 0 1	CAM SWITCH RELAY CABLE	1	AK
6	C C N W – 4 7 6 1 S C 0 1	CUTTER SWITCH RELAY CABLE	1	AK
7	C C N W – 4 7 6 3 S C 0 1	MOTOR RELAY CABLE	1	AP
8	Q C N W – 4 7 6 4 S C Z Z	PAPER SENSOR RELAY CABLE	1	BB
9	V H P R P i – 5 7 4 / / /	PHOTO TRANSISTOR [PSNS]	1	AF
10	V R S – T S 2 A D 2 2 1 J	RESISTOR (1/10W 220Ω ±5%)[R100]	1	AA
11	Q P W B S 2 9 1 5 S C Z 4	EXTENSION PWB	1	AR

2. Description

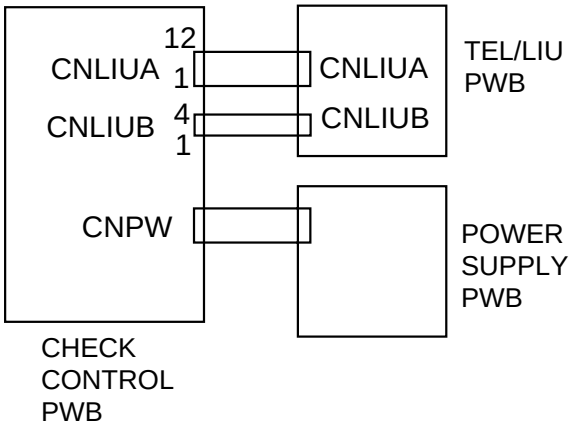
2-1. Relay board unit

1. Remove the TEL/LIU PWB, control PWB and Power Supply PWB from this unit, and mount the relay board unit instead.
   - Before connecting the wiring to the relay board unit, set the test PWB switches to the fixed position.
2. The setting is as follows.



Relay cable

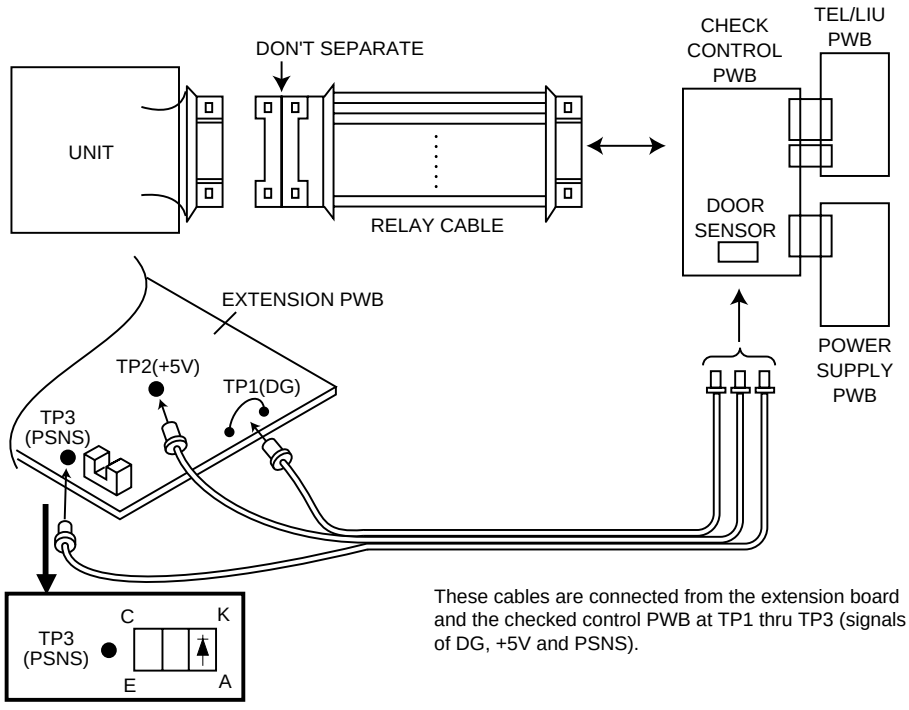
- The relay cables are used as one pair.
- The sensor is wired as shown in the following figure.
- The door swich and hook switch are manually operated.



The recording paper sensor ($\overline{\text{PSNS}}$) is operated by OR of the mechanical unit switch and the test PWB switch. When performing installation in the machine unit, set the test PWB switches to the fixed position.

	Mechanical unit	PWB to be tested
	Actual operation with mechanical unit	
Recording paper sensor	ON/OFF operation	OFF (Photo interrupter is interrupted.)
	PWB sensor check	
Recording paper sensor	OFF	ON/OFF operation

NOTE



These cables are connected from the extension board and the checked control PWB at TP1 thru TP3 (signals of DG, +5V and PSNS).

3. Shading paper

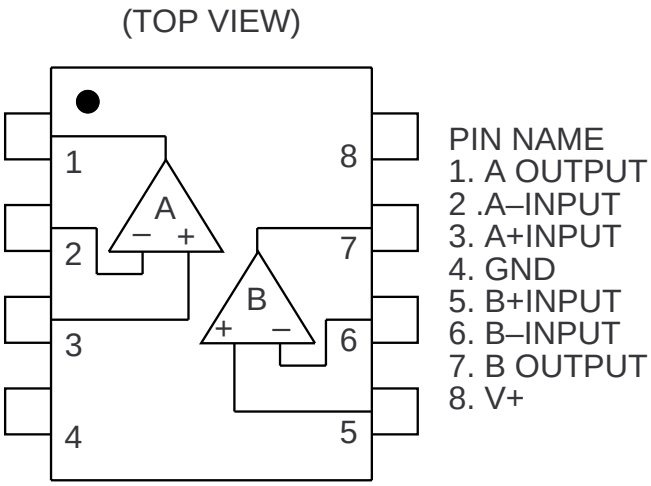
The white and black basis is applied to remember the shading waveform. Be sure to perform this operation when replacing the battery or replacing the control PWB. Execute in the shading mode of DIAG mode.

UX-178/NX-72 SERIES SHADING WAVE MEMORY STANDARD PAPER (PSHEZ3354SCZZ)

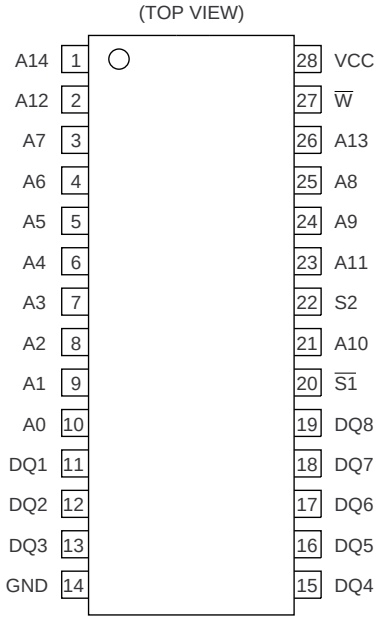
[2] IC signal name

CONTROL PWB UNIT

IC9: VHiNJM2904M-2 (NJM2904M)

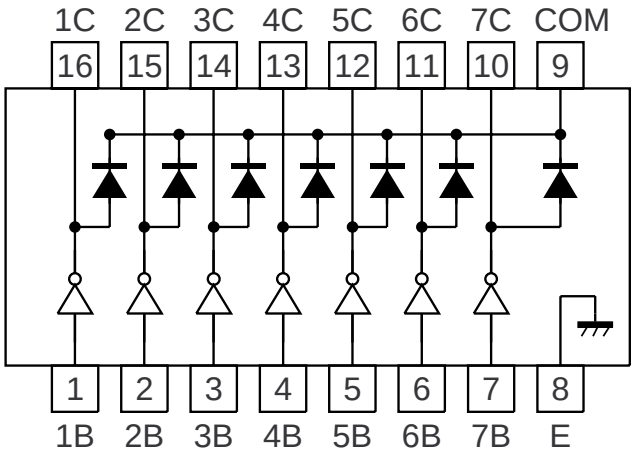


IC5: VHiW24257S7LL (W24257S-70LLT)

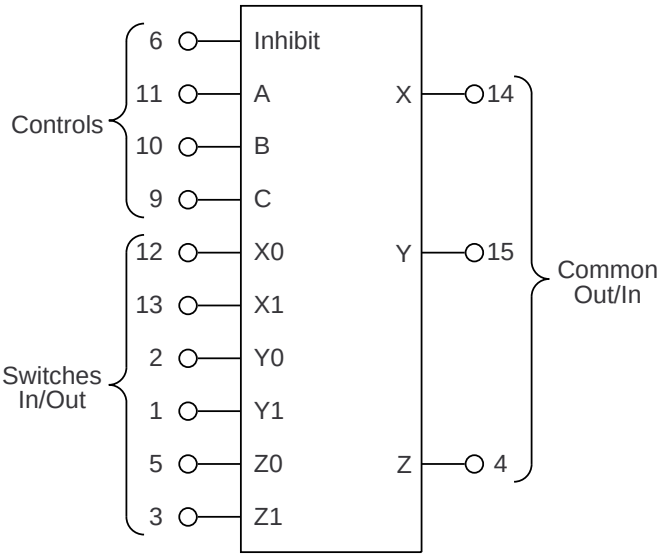


Pin name	Signal
A0~A12	Address input
CE1/CE2	Chip enable
WE	Write enable
OE	Write enable
I/O1~I/O8	Data I/O
VCC	Power source
GND	Ground
N.C.	No connection

IC10: VHiULN2003ANS (ULN2003ANS)

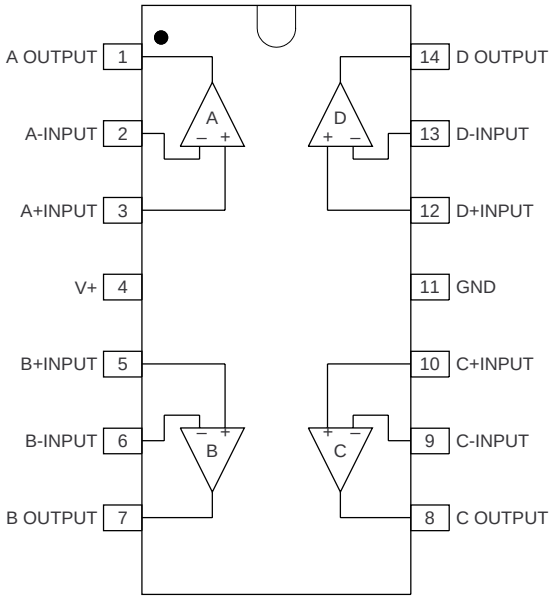


IC6: VHiHCF4053M1T (HCF4053B)

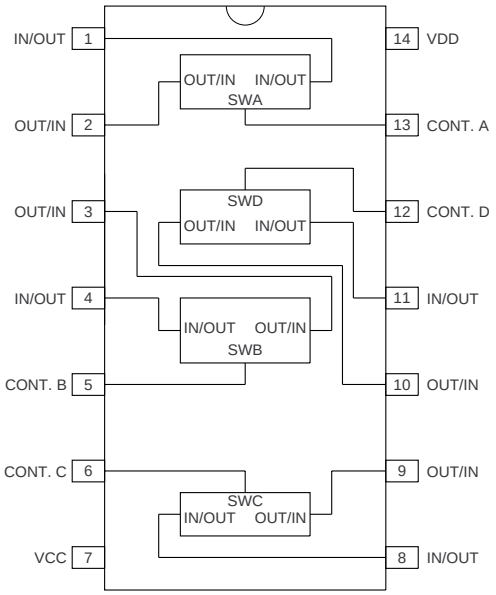


VDD: Pin 16
VSS: Pin 8
VEE: Pin7

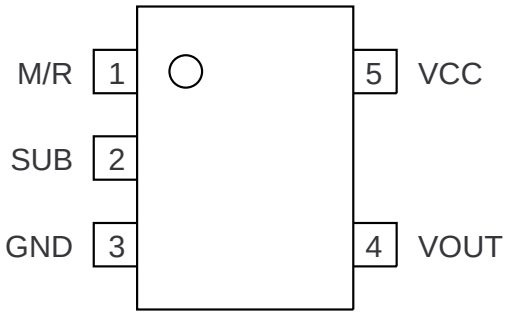
IC8: VHiNJM2902M-1 (NJM2902M)



IC3: VHiHCF4066M1T (HCF4066)

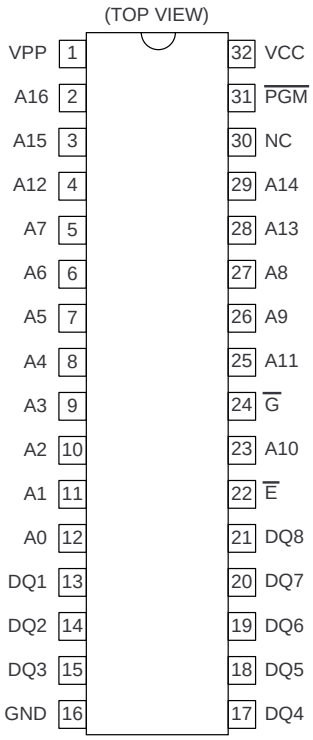


IC100: VHiPST596CMT1 (PST596CNR)



(TOP VIEW)

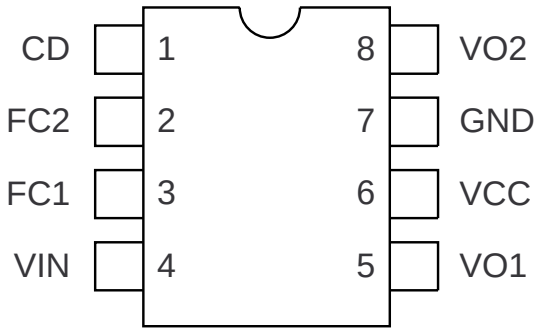
IC7: VHi27C01012TI (27C010) EP-ROM



Pin name	Signal
A0~A16	Address input
$\overline{E}$	Chip enable
$\overline{G}$	Output enable
GND	Ground
$\overline{PGM}$	Program
DQ1~DQ8	Data output (Program input)
VCC	+5V power
VPP	+12.5V power(*)

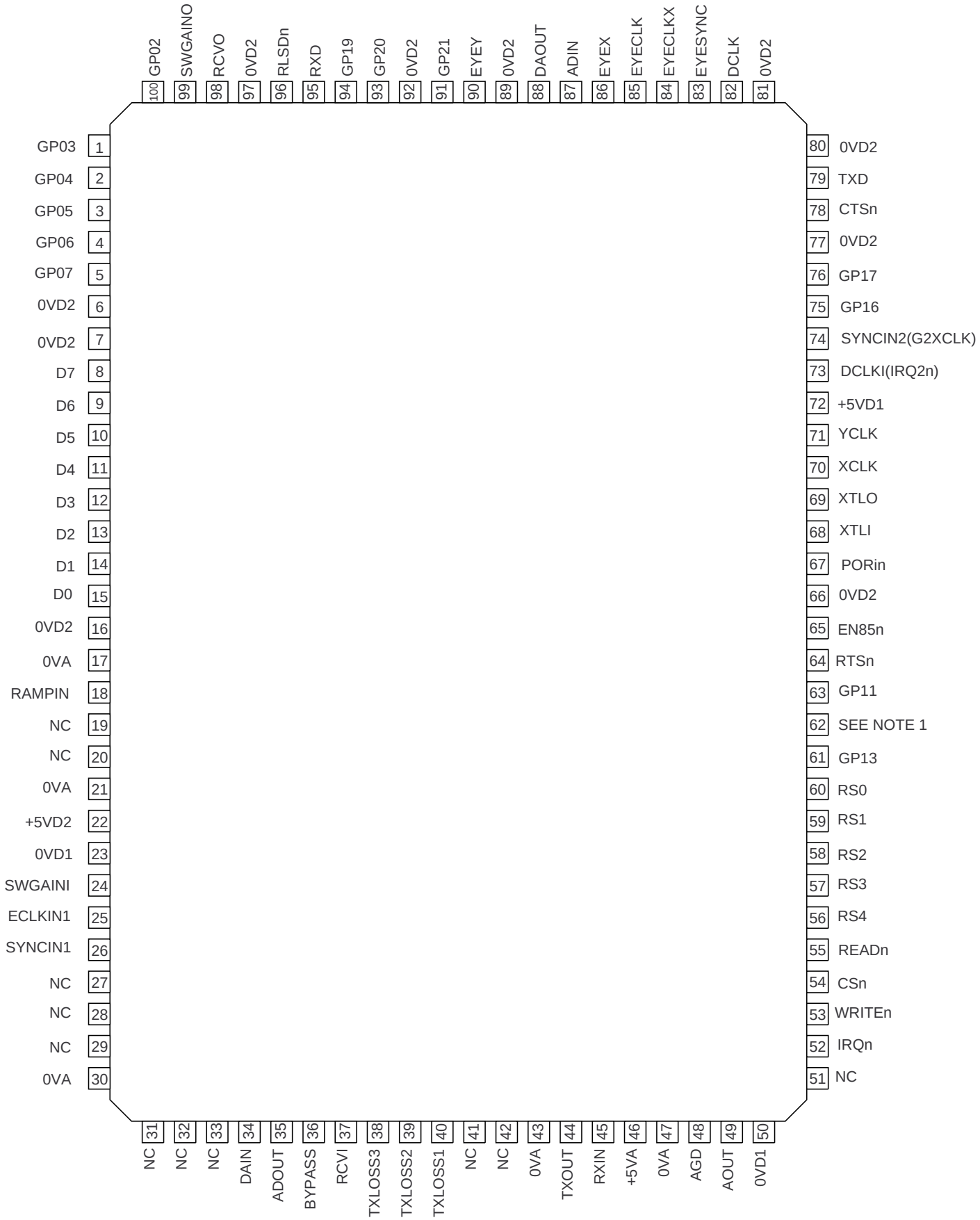
(*) Only in the program mode

IC1: VHiMC34119DR2 (MC34119DR2)



(TOP VIEW)

IC4: VHiR96XFC3CID (96DFXL-CID)



IC2: VHiR96XFC3CID (XFC3)